

American Fruit Grower

WESTERN EDITION

FEBRUARY • 1953



• SPRAY PROGRESS IN THE WEST •

NOW ON DISPLAY!

*So startlingly new!
So wonderfully different!*



THE STRIKING NEW 1953
"TWO-TEN" 4-DOOR SEDAN

CHEVROLET FOR '53

*Entirely NEW
through and through!*



**MORE PEOPLE BUY CHEVROLETS
THAN ANY OTHER CAR!**

Entirely New Styling

Chevrolet's lower in height, with long, flowing lines to give you the newest look in cars! Beautiful new interiors are richer, roomier.

Entirely New Power

New 115-h.p. "Blue-Flame" engine with Powerglide.* 108-h.p. "Thrifty-King" engine with gearshift models.

Entirely New Powerglide*

New automatic starting and passing range gives you flashing getaway, greater passing ability in city driving.

Entirely New Economy

You go farther on every gallon of gasoline! You save on operation and upkeep! And Chevrolet is the lowest-priced line in its field.

Entirely New Safety

Easier, safer control. Greater visibility with new, one-piece windshield. Finer brakes. It's the safest Chevrolet ever!

Entirely New Durability

Heavier, stronger, more rigid construction means even longer life for a car always famous for durability and dependability!

Entirely New Power Steering

Park and steer with finger-tip ease, yet retain the feel of the road. Optional at extra cost, exclusive to Chevrolet in its field.

*Combination of Powerglide automatic transmission and 115-h.p. "Blue-Flame" engine optional on "Two-Ten" and Bel Air models at extra cost. (Continuation of standard equipment and trim illustrated is dependent on availability of material.) Chevrolet Division of General Motors, Detroit 2, Michigan.

For Your Pre-pink and Pink Sprays



use



*The Right Product
for Every Pest Problem!*

ORCHARD BRAND PRODUCTS FOR THE FRUIT GROWER INCLUDE:

GENITOX* DDT PRODUCTS
GENITHION* PARATHION PRODUCTS
BENZENE HEXACHLORIDE
LINDANE
LEAD ARSENATE (Astringent and
Standard)
GENITE* ORGANIC MITICIDES
ARAMITE MITICIDE
DDD PRODUCTS
NICOTINE SULFATE
METHOXYCHLOR
TEPP
SPRAYCOP* COPPER FUNGICIDES
MERCURY FUNGICIDES
DRITOMIC* SULFUR FUNGICIDES
WEED KILLERS
OTHER PRODUCTS
Stafast* and Sta-set*
(Pre-harvest Sprays)
Stafast Fruit Thinner
Filmfast* Spreader-sticker
Genfilm L—Liquid Spreader-sticker

Available from Orchard Brand
dealers everywhere

Whatever pest control problem this coming season may bring
... there's the right Orchard Brand product to do the job for you.
Developed out of intensive laboratory and field research, they
insure top performance both in the spray tank and in the field.
For example, here are the recommended Orchard Brand spray mate-
rials for your pre-pink and pink sprays on apples!

For Scab:

- Ferbam Spray Powder
(organic fungicide containing 76% ferric dimethyl
dithiocarbamate)
- Puratized Apple Spray and Puratized Agricultural Spray
(organic fungicides)
- Micro-Dritomic Sulfur

For Curculio:

- 50% Methoxychlor Spray Powder
- Genithion P-15 Spray Powder
(Contains 15% parathion)
- Lead Arsenate, Standard and Astringent

For Mites:

- Genite 883 Spray Powder
(p-chlorophenyl p-chlorobenzene 50%)
- 15% Aramite Spray Powder
- Genithion P-15 Spray Powder

For Aphids:

- Genithion P-15 Spray Powder
- Nicotine Sulfate Solution

* Reg. U. S. Pat. Off.
General Chemical Trade mark

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

Serving Agriculture from Coast to Coast

**Get Top Quality
and Yield
of APPLES**

Use Du Pont **NUGREEN**[®]

in foliage sprays and in irrigation water

- Get the most out of your nitrogen. "NuGreen" in your sprays is all available to your crop. No waste in leaching, no harmful soil residue.
- Feed your crops more accurately. "NuGreen" enables quick, sure "precision" feeding. You apply it only when crops need it, so you get greatest crop growth from each unit of nitrogen you supply.
- Save labor and equipment. Mix "NuGreen" with your usual spray materials and do two jobs in one, or put it in irrigation water and let water spread it.
- Use "NuGreen" on your apples this season. Promising also as foliage spray on peaches, cherries, plums, pears. Adapted to all irrigated crops.
- See for yourself how "NuGreen" improves yields and helps you end problems of feeding crops adequate nitrogen without waste.

See your "NuGreen" distributor.



E. I. du Pont de Nemours & Co. (Inc.)
Polychemicals Department
Wilmington, Delaware

NUGREEN[®]

FERTILIZER COMPOUND

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

**45%
NITROGEN**

Free Flowing Shot. "NuGreen" supplies urea nitrogen. Dissolves readily in spray or irrigation water. Available in 80-lb. bags only.



FEBRUARY

VOL. 73

1953

No. 2

CONTENTS

Cover photograph this month shows a fine cluster of oranges produced in the San Joaquin Valley of California. California is Number 2 orange producing state with 42,000 boxes in 1952-53 to Florida's 77,000 boxes. Photo by Ewing Galloway.

Letters to the Editor.....	10
1952 Experience with Insecticides.....	15
By B. A. Porter	
Fire Blight.....	16
By Dwight Powell	
Spraying for Disease Control.....	17
By John C. Dunegan	
Where to Expect Spring Frosts.....	18
By Irving P. Krick	
Progress in Concentrate Spraying—	
New York.....	20
By A. B. Burrell	
Michigan.....	21
By Arthur E. Mitchell	
Those Pesky Pests!.....	23
By Eldon S. Banta	
New Methods of Pest Control.....	24
By David G. Hall	
Spraying Apples.....	25
By M. B. Hoffman	
Compatibility Chart for Insecticides	
and Fungicides.....	26
The 1953 Compatibility Chart.....	27
Every Grower has a Stake in Pesticide	
Legislation.....	27
By Lea S. Hitchner	
State News.....	28
Fruit Pest Handbook.....	28
Calendar of Coming Events.....	30
Washington Fruit Letter	
By Larston D. Farrar.....	33
The Question Box.....	37
The Orchard Home.....	61
Editorial Page.....	62

AMERICAN FRUIT GROWER

Published Monthly by
AMERICAN FRUIT GROWER PUBLISHING CO.
Willoughby, Ohio

E. G. K. MEISTER

Publisher

Editorial Staff

R. T. MEISTER H. B. TUKEY
E. K. GOULD ELDON S. BANTA
M. A. FRAZIER

Washington Correspondent LARSTON D. FARRAR

Advertising Manager
EDWARD L. MEISTER

BRANCH OFFICES AND REPRESENTATIVES

CHICAGO, Peck and Billingslea, Inc., 185 No. Wabash. Phone—Dearborn 2-0292
SAN FRANCISCO, McDonald-Thompson, 625 Market St. Phone—Yukon 6-0647
LOS ANGELES, McDonald-Thompson, 3727 West 6th St. Phone—Dunkirk 7-5391
SEATTLE, McDonald-Thompson, Terminal Sales Bldg. Phone—Main 3860
DALLAS, McDonald-Thompson, 6617 Snider Plaza Phone—Logan 6283
PORTLAND, McDonald-Thompson, 115 S.W. 4th Ave. Phone—Atwater 7401
DENVER, McDonald-Thompson, 222 Colorado National Bank Bldg. Phone—Keystone 4669

SUBSCRIPTION RATES

Domestic, 3 years \$2.00, 1 year \$1.00. Single copy 25c. Canada and foreign \$1.50 per year.

CHANGE OF ADDRESS

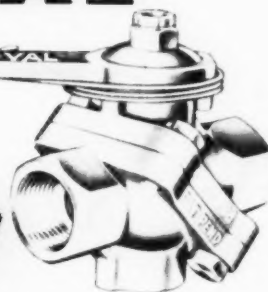
Please notify us if you change your address, giving us the old address as well as your new one.

[PRINTED
IN U.S.A.]

FEBRUARY, 1953

Announcing the NEW BES·VAL

BALL-TYPE QUICK SHUT-OFF VALVE

\$19⁷⁵f.o.b. Oakland
or Davenport, Iowa

Here is the ideal shut-off valve replacement for your present sprayer. Only the new BES·VAL has this combination of important features—

- One pull opens, one pull closes
- Rope, rod or manually operated
- Automatically locks open and closed
- Ball action, full flow opening
- Flow in either direction
- Mounts in any position
- Handles pressures to 1,000 lbs.
- Easily operated under high pressures
- Rugged construction for long life
- Quick and easy to install
- Low in price
- Parts easily replaceable; inexpensive

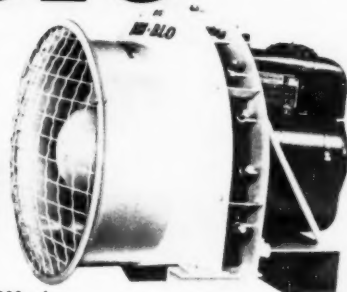
More Volume with Less H. P.

BES·BLO

WITH THE HIGH VOLUME AXIAL FLOW FAN

\$741⁴²

f.o.b. Davenport, Iowa



Convert your present rig to one man spraying with BES·BLO—the blower with the efficient Besler axial flow fan that requires less horsepower to produce more air volume—

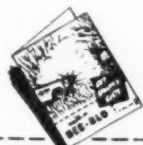
15,000 c.f.m.

Also available in sizes
25,000 and 7,500 c.f.m.

- THOROUGH COVERAGE TO TOPS OF TALLEST TREES
- TWO-WAY OR ONE-WAY OPERATION
- COSTS LESS TO BUY AND OPERATE
- INSTALL IT YOURSELF—EASILY
- AVAILABLE WITH BES·VAL QUICK SHUT-OFF VALVE

WRITE, TODAY, FOR
FREE LITERATURE...

Prompt delivery from Oakland, Calif. or assembly plant at Davenport, Iowa; warehouse stocks at Kansas City, Peoria and Philadelphia.



BESLER CORPORATION, 4053 Harlan Street, Emeryville, Oakland 8, Calif.

Send me free literature on:

- ☐ BES·VAL quick shut-off valve
☐ BES·SPRAY sprayers
☐ BES·BLO (to convert present sprayers)

NAME _____

ADDRESS _____

CITY _____

STATE _____

HERE'S PROOF!

NOW YOU CAN HAVE

100% finer fruit finish

Larger fruit with better color

More fruit with better keeping qualities

Outstanding disease control

Resulting from new fungicide discovery

ORTHOCIDE

(ORTHOCIDE 50 Wettable is a new fungicide containing the new fungicidal chemical, Captan, chemically different from other fungicides now used.)

An ORTHOCIDE program gives you all this:

- Outstanding control of certain fungus diseases
- Harvest quality as much as 80% improved
- Superior storage quality
- Good plant safety
- Compatibility with most commonly used sprays
- Versatility—used on vegetables, fruits, seed bulbs, nursery plants and cuttings
- Healthy tree foliage

More yields per acre

ORTHO

World leader in scientific pest control

For best results ORTHOCIDE *must* be used as a part of a complete ORTHO program. To learn how to use ORTHOCIDE in your area, contact your nearest ORTHO Fieldman.

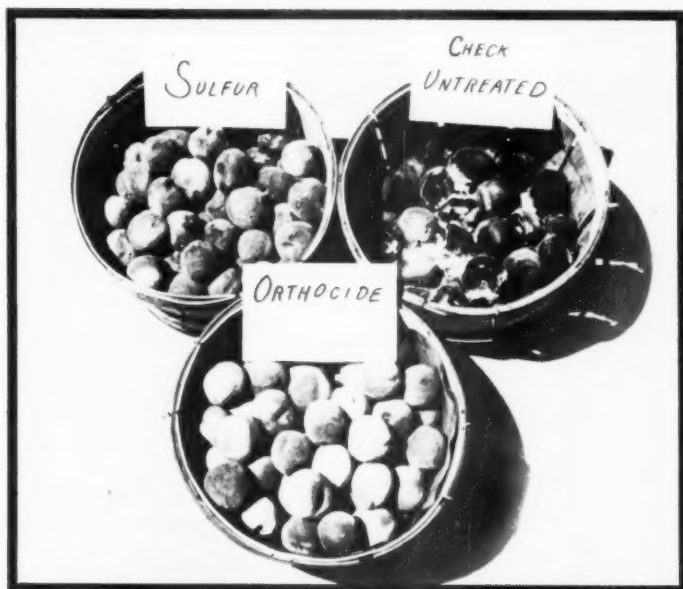
Other outstanding ORTHO Sprays and Dusts are:

ORTHOPHOS 4	VAPOTONE
VAPOPHOS	TAG
ISOTOX	ORTHENE 3-D

CALIFORNIA SPRAY-CHEMICAL Corp.

Fennville, Michigan	Portland, Ore.	Whittier, Calif.
Medina, N. Y.	Sacramento, Calif.	Caldwell, Idaho
Linden, N. J.	San Jose, Calif.	Maryland Heights, Mo.
Shreveport, La.	Fresno, Calif.	Oklahoma City, Okla.
Goldsboro, N. C.	Orlando, Fla.	Phoenix, Arizona

U.S. PAT. OFF. ORTHO, ORTHOCIDE, ORTHOPHOS, VAPOPHOS, ISOTOX, VAPOTONE, TAG, ORTHENE



HERE'S PROOF!

Dramatic Improvement in Storage Quality

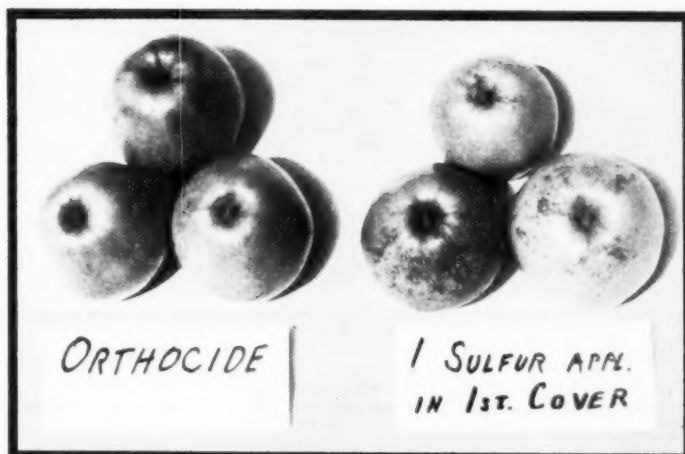
Photo on the left shows graphically the greatly improved storage qualities of ORTHOCIDE-treated fruit.

The peaches in the basket at upper left came from sulfur-sprayed trees. Those in the basket at upper right received no spray protection. Those in the lower basket were picked from ORTHOCIDE-sprayed trees. The three groups were held at 34° temperatures for 23 days. Note the quality of the ORTHOCIDE-treated group.

HERE'S PROOF!

Finer Finish on Michigan Apples

Note the difference in the Golden Delicious Apples. Those on the right are sulfur-blemished. The ORTHOCIDE-sprayed fruit on the left are not only free of russetting but the lenticels, which are usually large and blackened under sulfur treatment, were considerably reduced.



HERE'S PROOF!

Endorsed by Leading West Virginia Grower!

Left to right are: Nelson Page, grower, Winchester, Va., Lester Arnold, grower, Winchester, Va., and Robert Fierro, grower and fruit broker, Martinsburg, W. Va.

Mr. Fierro writes: "I have been using ORTHO Products and ORTHO service on my apple and peach orchard for years with fine results.

"This year only TAG and ORTHOCIDE were used on my apples for disease control. Control was perfect with color and finish of the fruit the most beautiful I have ever seen.

"I am suggesting the use of ORTHOCIDE and TAG to the many apple growers for whom I market. It means easier selling for me and better prices for them. ORTHOCIDE-sprayed fruit topped all markets in 1952."

(signed) Robert Fierro





“Wheel Tractors can’t touch our orchards in spring...”

AL YONAN Ionia, Michigan

“In the spring our orchards are plenty wet. Wheel tractors can’t be used. With our D2 we go anywhere without fail, regardless of mud. It’s a wonderful tractor.”

▶▶ Will scab and moth get the jump on you this spring because your orchard’s too wet for your tractor? Not if you’ve a Cat Diesel Tractor! Here’s orchard-suited power—just right for hauling a 500 gallon spray rig in soggy or muddy orchards. *Compact*—works close to trees without damaging foliage. *Powerful*—keeps your hired help to a minimum—will do the work of 2 ordinary small orchard tractors. *Light-treading*—won’t pack your orchard soil. *Economical*—costs less to operate than gasoline tractors developing ½ the horsepower. *Long-lived*

—Caterpillar Diesel Tractors are still at work after 50, 60, even 80 thousand hours of hard use. No other make has come close to this record.

HOW TO BE SURE YOU’LL SPRAY ON SCHEDULE THIS SPRING

Call your Caterpillar Dealer right now. Arrange for a demonstration soon. Your Dealer will gladly show you the matched working equipment including tool bar with dozer, disk ridger, cultivators, ditcher and furrower.

CATERPILLAR TRACTOR CO., Peoria, Illinois

CATERPILLAR Diesel Orchard Tractors

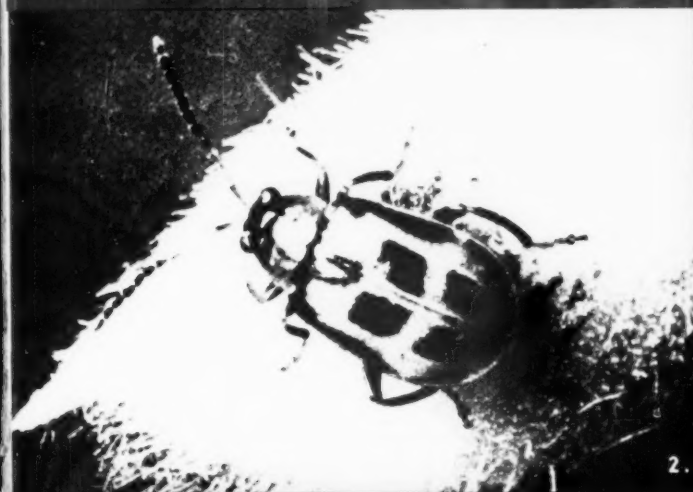
DIESEL ENGINES • TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

AMERICAN FRUIT GROWER

A few of more than 100 different insect pests controlled by parathion...



1. Pear psyllid (adults shown on apple). Attacks peach, apple, prune and plum, cherry and other fruits.



2. Common bean leaf beetle (shown on bean pod). Parathion also controls Mexican bean beetle, leafhopper, aphids, red spider, leaf roller, army worms and leaf miner on all beans. 3. Aphids (shown on tobacco bud). Parathion controls almost all aphid species.



Parathion gives broad protection... at low cost!

On many crops parathion alone gives complete control. On others it has reduced the number of other insecticides needed to control difficult groups of insects.

Write for the new Parathion Grower's Handbook. It includes over 200 accepted uses on more than 50 different crops... safety precautions... valuable information on dosages and times of application.



PARATHION INSECTICIDES ARE
AVAILABLE FROM NATIONAL MANUFACTURERS

AMERICAN *Cyanamid* COMPANY

Manufacturers of *Thiophos* Parathion Technical

Agricultural Chemicals Division
30 Rockefeller Plaza, New York 20, N. Y.

LUNG and EYE protection FOR GROWERS



RESPIRATORS

AGRISOL

Parathion, Aldrin,
Toxaphene, etc.

U.S.D.A.
tested

Agri-Tepp

tepp, help

Comfortable, efficient protection for
field and aerial application of
insecticides.

No. 25 DUST RESPIRATOR—a filter
respirator for protection against
non-toxic dusts.

Gas Masks

Lightweight, easy-
to-wear full-face
protection for heavy
concentrations of
insecticides. Types
for all hazards. State
material being used.



MonoGoggle

Lightweight, all plastic eye
protection for sprays, dusts
and impact hazards in field
and farm shop.

Don't take chances—
keep on the safe side
—use agricultural
protective equipment
by Willson. Write for
literature and colorful
agricultural safety
poster.

TRADE MARK

WILLSON

WILLSON PRODUCTS, INC.

Established 1870

112 Thorn St., Reading, Pa.

LETTERS TO THE EDITOR

Answers Letters

On Apple Cider

Dear Editor:

I have received hundreds of letters from all parts of the country concerning the article "Health—Then Wealth—From Apple Cider" by Jack Whitnall. As it is impossible to answer all of these letters personally, I will try to answer them through this column.

First of all, I make a blended cider of several different varieties which appeals to all tastes, although any one variety can be used. My mill slices or grates the apples, and we make fresh cider daily as we have apples kept in cold storage for this purpose.

I started drinking two gallons of cider daily, which naturally cuts down on food intake; and I continued to drink as much a day as possible, but without forcing myself. I now average a quart a day. Results cannot be expected in a day, a week, or a month.

It is impossible for me to say that cider will cure everyone afflicted with arthritis—I only know what it did for me. Before I started drinking cider, I had suffered from arthritis for several years and had taken many treatments without results. I am now 54 years old and can do as much work as any of the men who work for me. I have received many letters from doctors who pointed out that the cider did a "clean-up campaign" in my body and the body, when given a chance, can usually produce results.

Many people asked if I could ship cider to them. I am sorry that I cannot do this as our cider is pure, fresh juice, untreated, and unpasteurized, and we sell it only fresh. A few refrigerated trucks buy and haul it to closeby cities.

I do not believe you will get the same results with treated juices or cider. So many asked out our "Cider-Chooz." We hope to extend distribution to more states this coming year. At present we have shipped to California, Oregon, and Washington.

A great many people also asked for plans to our house. My wife drew up the floor plans and copied the exterior from a picture found in a magazine.

To all those wonderful people who wrote enclosing stamped addressed envelopes, I hope this letter answers your questions. Yakima, Wash. Ed J. Kinze

Malling IX Tests

Dear Editor:

In hardness trials at Central Experimental Farm at Ottawa, Canada, we find Malling IX the tenderest stock that we have tested to date. For this reason we do not recommend it for planting in commercial orchards. However, due to the fact that in most winters in the colder regions of Canada there is adequate snow coverage, we do recommend trees on Malling IX as a backyard proposition. Under such conditions if we should have an open winter with little snow protection the loss of a few trees in a backyard garden would not be disastrous as it might be in the case of a commercial grower.

We feel that these dwarf trees have a real place in the home garden since they take up very little space, and they are better looked after from the point of view of disease and insect control than the

standard tree. Nevertheless, we would like to have a genuinely hardy dwarf stock, and we are devoting considerable attention to this phase of work at the present time.

I feel that we are making considerable progress, and I am hoping that we will evolve something worthwhile out of our baccata selections. There does not seem to be any difficulty in making selections that will root readily and that are hardy and resistant to disease. The main difficulty is to get one that has an extreme dwarfing effect like Malling IX. Ottawa, Canada D. S. Blair

Hibernal Stock Sources

Dear Editor:

I was interested in an item in the November "Question Box" relating to stock of Hibernal apple trees. This variety, which is not a crab, is our standard for use as a hardy stock for top-working. It is available in the following Minnesota nurseries: Swedberg Nurseries, Battle Lake; The Pequot Nurseries, Brainerd; The Andrews Nursery Co., Faribault; Bergeson Nursery, Fertile; Howard Lake & Victor Nurseries, Howard Lake; Lake Cities Nurseries, Inc., Lake City; Schwab Fruit Farm, 220 N. 5th St., Mankato; Pfander Pioneer Nursery, New Ulm; Cashman Nurseries, Inc., Owatonna; Summit Nurseries, Stillwater; and the Strand Nursery Co., Taylor Falls.

This variety is widely used for top-working in Iowa and in the Dakotas. Nurseries in those states usually handle the Hibernal. St. Paul 1, Minn. W. G. Brierley

America's Oldest Apple Tree

Dear Editor:

I was very interested in reading about "America's Oldest Apple Tree" in a recent issue of AMERICAN FRUIT GROWER, as this tree stands on the farm which has been in our family for six generations. The cavity which the little article spoke of was filled with concrete. Two men at a time worked on the inside of the tree cleaning and preparing it for the filling. It required 33 bushels of crushed stone, 22 bushels of sand, and 11 bushels of cement. A glass jar containing information about the tree, also the names of the workmen, was placed in the center of the filling.

My husband had a nursery "root" a number of growths from the tree, and they are now of bearing age. So the tree will be perpetuated, not by memories alone, but by its fruits. Philippi, W. Va. Lucy K. O'Neal

Plight of Appalachian Apple Service

Dear Sir:

The article and editorial in the November issue of AMERICAN FRUIT GROWER on the plight of the Appalachian Apple Service was very good. The editorial expressed very well the same thoughts that I have on the subject. It seems to me that one reason we are in this mess is because Congress has delegated unconstitutional powers to the president. I have written to Congressmen and others, but my small voice does not seem to carry very far. Escondido, Calif. B. R. Cloyd

AMERICAN FRUIT GROWER

CASE Announces MOST MODERN TRACTOR for Fruit Farming



HOOK UP SITTING DOWN

Stay right on the tractor seat—back up to lift-type disk harrow (tandem or offset), mounted tooth harrow, plow, or other Case Eagle Hitch Implement. Hook on with claws of Eagle Hitch, slip in pin, and you're ready to work . . . all in a minute or so! Saves minutes that add up to hours and days.

Easy steering—takes little effort from you to turn, even in tight quarters. Yet shocks from chuck holes, stones, etc., are blocked before they can jerk wheel out of your hands, cause scarcely a twitch in the steering wheel. Prevents the injuries to hands, fingers, wrists often caused by steering wheel backlash. No fighting the wheel in rough ground.

Getting on this new low-profile Case Tractor is easy, comfortable, and convenient. It's just a short step from the ground to the low platform—no scrambling over rear-mounted implements. Profile is low for working under trees—regular row-crop clearance for cultivating corn, etc. Cultivate up front or behind as you like. Eagle Hitch for one-minute hook-up right from the tractor seat. Constant Hydraulic Control for precise implement operation. Eager 2-plow power—low first cost and low operating costs. Here's THE tractor for tree, truck, and field crops. Hustles over 100 different farm jobs with time-saving, money-saving Eagle Hitch Implements. With handy utility carrier, it speeds hauling chores. Watch for it—be one of the first to see the newest of modern tractors.

Get a personal demonstration. Stop in at your Case dealer's. Step onto the low platform . . . rest in the relaxing seat . . . test that easy-turning steering wheel. Then make arrangements to drive it yourself.



SEND FOR INFORMATION

Case builds 25 great tractors and a full line of farm machines. For catalogs or folders, mark here or write in margin any that interest you. Tear out, mail to J. I. Case Co., Dept. B-13, Racine, Wis.

- | | |
|---|---|
| <input type="checkbox"/> Low-seat 2-plow Tractor | <input type="checkbox"/> Eagle Hitch Mounted Implements |
| <input type="checkbox"/> Larger 2-plow "SO" Tractor | <input type="checkbox"/> Offset Disk Harrows |
| <input type="checkbox"/> 3-plow "DO" Tractor | |

NAME _____

ADDRESS _____



Leading Growers Produce
**MORE CLEAN FRUIT
AT LOWER COST**

Black Leaf[®] SPRAY MATERIALS

Aramite 25% Emulsifiable Concentrates

Aramite Wettable Powder 15%

Arsenate of Lead

BHC Wettable Powder 10%

DDT Wettable Powder 50%

Dieldrin Wettable Powder 25%

Black Leaf 40 • Black Leaf 155

Black Leaf 253

Chlordane Wettable Powder 40%

Ferbam Wettable Powder 76%

Lindane Wettable Powder 25%

Malathion Wettable Powder 25%

Parathion Wettable Powder 15%

Parathion Wettable Powder 25%

Phygon Wettable Powder 50%

T.D.E. Wettable Powder 50%

T.D.E. 25% E. C. • T.E.P.P. 40%

T.E.P.P. 20%

Dusting Sulphur

In addition to the spray materials listed above, many other pest control products carry the famous Black Leaf trade-mark—insecticides, fungicides, weedicides and rodenticides. Write for full information on the complete line.



Black Leaf[®] 253 **with** **Cover Spray**

MORE AND MORE fruit growers are getting bigger yields of clean fruit by using Black Leaf 253, the new, multi-purpose, summer cover spray. Black Leaf 253 provides all the summer protection most orchards need against insects, in one, simple, easy-to-use product. And in test after test, Black Leaf 253 has topped other more complicated and more expensive cover spray programs in **TOTAL CLEAN FRUIT!**

BLACK LEAF 253 controls codling moth, red-banded leafroller, leafhoppers, European red mite, red spider mite, San Jose scale, Forbes scale, and similar pests.

BLACK LEAF 253 is Black Leaf Tobacco Base "impregnated" with 25% of DDT and 3% of Parathion by an exclusive process.

DUSTLESS. Black Leaf 253 is scientifically treated to eliminate dust. Just dump it in the water as the spray tank is refilling.

COMPATIBLE. Mixes with all the fungicides and other materials recommended in combination with DDT and Parathion.

LESS RESIDUE. Black Leaf 253 provides excellent control with minimum chemical residue and essentially no visible residue.

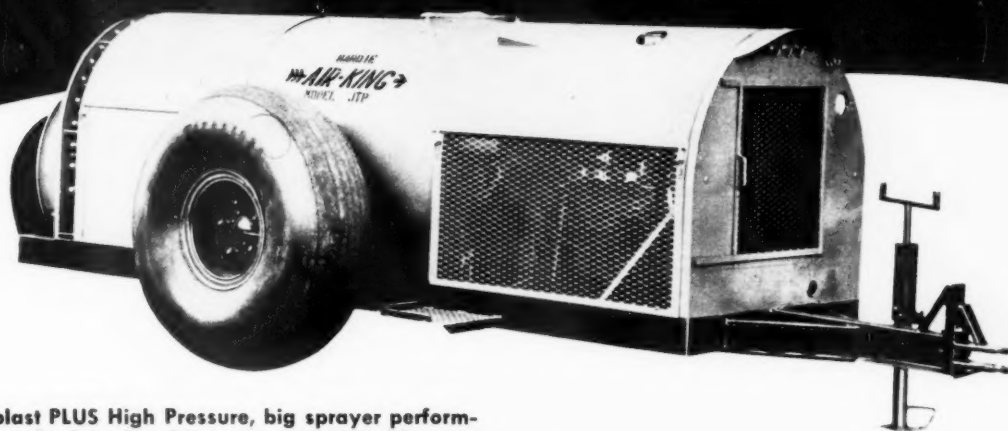
START NOW to increase your profits with all-summer use of economical, highly-effective Black Leaf 253. Get the facts about this superlative, new product from the man who sells you your spray materials... or write the address below for full information.

TOBACCO BY-PRODUCTS & CHEMICAL CORPORATION
Richmond 8, Virginia • Sales Offices in 22 Cities

DEPENDABLE PEST CONTROL PRODUCTS SINCE 1885

AMERICAN FRUIT GROWER

The One-Man Sprayer of the Year



Air-blast PLUS High Pressure, big sprayer performance at far less than big sprayer price in this great new Hardie Air King Model JTP.

- Handles any spray-concentrate, semi-concentrate, dilute.
- Big Hardie high pressure pump—30 gpm at 400 psi.
- 55 HP Heavy Duty engine.
- 31 inch Hardie axial combination type fan.
- Discharge valve for hand gun spraying.
- Famous Hardie Wun-pull valves control two 11 nozzle high pressure booms for one or two side operation.
- 25 adjustable deflectors give complete spray pattern and direction control.

Big enough for any acreage and always ready for the many routine spraying jobs on every farm. Here is complete sprayer equipment in one package.

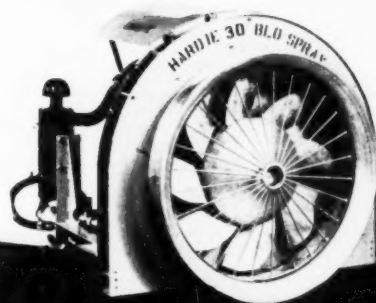


ASK YOUR DEALER OR WRITE FOR CATALOG

Find out about the new Hardie air blast and high pressure sprayers and radically new row crop dusters. Use the coupon.

HARDIE
PEST CONTROL EQUIPMENT

• SOLD AND SERVICED



Convert Today with
HARDIE Blo-Spray

Makes a real air blast sprayer of the old high pressure unit.

Adjustable mounting frame makes easy installation.

New cast aluminum fan.

Comes complete—ready to go—not another thing to buy.

Does not interfere with hand gun spraying as usual.

Two sizes.



The Hardie Manufacturing Company,
Hudson, Michigan.

3825 Santa Fe Ave., Los Angeles 58, Calif.
1435 N.W. Northrup St. Portland 9, Ore.

Please send catalog.

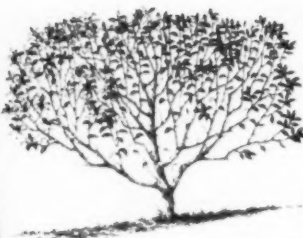
Name _____


Address _____

City _____ State _____

I am especially interested in _____

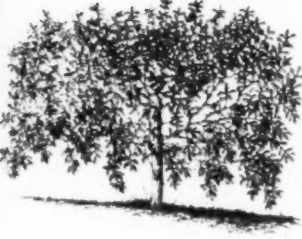
UNTREATED






the
difference
is...

TREATED
WITH ARAMITE



TREATED
WITH PHYGON-XL



Aramite — the mighty miticide

Controls European Red Mite, Pacific Mite, Two-Spotted Mite (as illustrated in treated apple tree above) Clover Mite and most other mites extremely effectively at economical dosages.

Results: More top-quality apples, peaches, almonds and walnuts.

Advantages: Non-hazardous, low cost per acre, compatible with most commonly used fungicides and insecticides, harmless to natural predators, gives no unpleasant flavor or odor to fruit.

Write for free Aramite and Phygon-XL Bulletins



Phygon*XL the orchard fungicide

Controls apple scab, bitter rot of apples and peaches, California blight of peaches, peach leaf curl, cherry leaf spot and other fungous diseases. Phygon-XL has proved to be the most potent non-mercurial fungicide commercially available.

Results: Increased yields of top-quality apples and stone fruits.

Advantages: Extremely low cost per acre, very easy to apply, compatible with most commonly used fungicides and insecticides, harmless to pollen and bees.

*U. S. Pat. No. 2,529,494 **U. S. Pat. No. 2,349,772

UNITED STATES RUBBER COMPANY

Naugatuck Chemical Division • Naugatuck, Connecticut

manufacturers of seed protectants — Spergon, Spergon-DDT, Spergon-SL, Spergon-DDT-SL, Phygon Seed Protectant, Phygon Naugets, Phygon-XL-DDT, Thiram Naugets — fungicides — Spergon Wettable, Phygon-XL — insecticides — Synklor-48-E, Synklor-50-W — fungicide-insecticides — Spergon Gladiolus Dust, Phygon Rose Dust — miticides — Aramite.

1952 EXPERIENCE *with* INSECTICIDES

The battle becomes more difficult as
insects develop resistance to sprays

By B. A. PORTER
U. S. Department of Agriculture

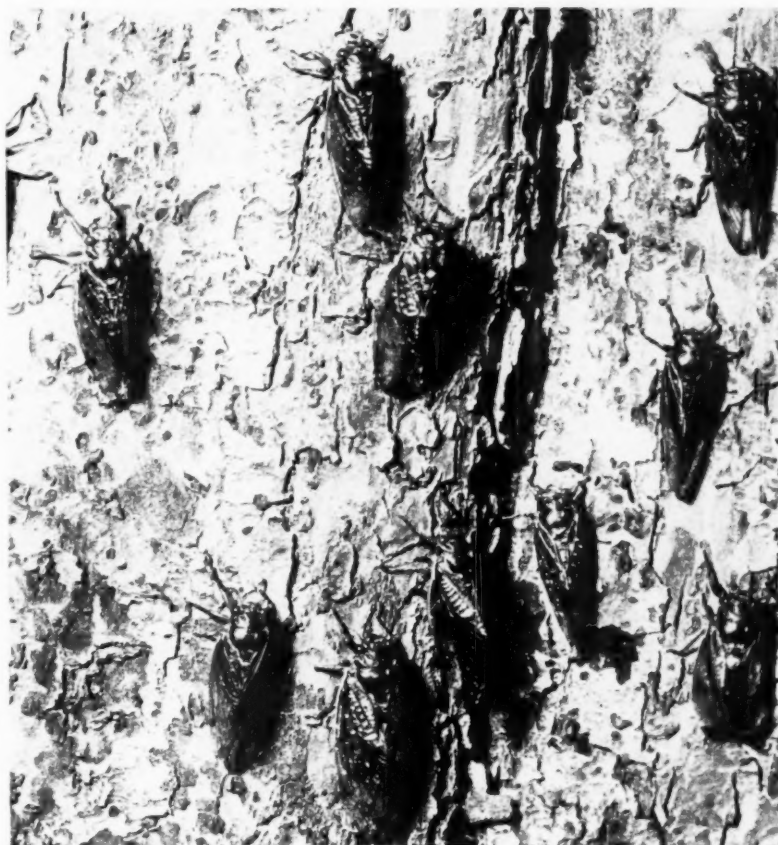
CHANGE is still the order of the day in fruit insect control. New insecticides are still coming into the picture, although the flow seems to be a little slower than it was a few years ago. Some of us old-timers look back to the days when things were much simpler. Then we remember the '30's when worm control seemed almost impossible, and we realize that real progress has been made, even though the situation is still most complicated.

The control of orchard mites is still a major problem in many deciduous fruit-producing areas. No generally applicable recommendation on control is possible. This is something that has to be worked out in each section with state or local authorities.

There are at least a half dozen kinds of mites that are of first importance in one orchard section or another. The miticide to be used will depend on the chief mite or mites to be controlled and the conditions that have to be met. For example, parathion may be the best bet against one mite in one situation, whereas Aramite, EPN, Ovotran, DMC, or one of several others, may best meet the need in other situations.

Speaking of parathion, evidence of mite resistance is piling up. In greenhouses, some strains of mites were found resistant to parathion the first time it was tried, whereas in other greenhouses the same species was well controlled with parathion. The strains resistant to this miticide seem to be becoming dominant in a number of orchards throughout the country. Fortunately, certain of the other miticides are still effective, so far at least.

Although the status of parathion as an apple spray may be a little uncertain because of the development of resistance on the part of mites, it is being used in increasing quantities in peach orchards in the East, in spite of the hazards involved in its use. Parathion comes the closest to an all-purpose peach insecticide of the numerous new materials that have come into the picture. It gives good con-



Lee Jenkins

1953 will be a locust year. For the first time in history an insecticide is effective against the 17-year locust shown above. TEPP will kill locusts on contact.

trol of curculio and oriental fruit moth, and holds scale infestation down very well. This applies to both the San Jose scale and Forbes scale, which has replaced the former species in many midwestern peach and apple orchards since the adoption of DDT.

It is unfortunate that some of the newer materials, especially parathion, TEPP, and other phosphorus compounds are much more dangerous to handle than some of the old-time insecticides. Although the number of such reports has been surprisingly small, illness caused by parathion has been reported from various localities, and there was at least one fatality in 1952 in the East. This reminds us,

that, as with "unloaded" guns and "gentle" bulls, carefulness should be the watchword.

The problem of increasing resistance of insects to various insecticides is causing more and more concern. Flies, mosquitoes, and lice have suddenly become almost immune to DDT after having been almost perfectly controlled by them.

After seven years during which it has been readily controlled, our old enemy, the codling moth, shows some signs of developing resistance to DDT. A year ago we stated that there was little or no indication of the development of resistance to DDT

(Continued on page 56)



Above—Blossom blight on pear. Six of the seven blossoms that are shown in photo have been killed by the fire blight bacteria. Left—Typical form of blossom and twig blight on apple. Note the dead blossom clusters and leaves on upper part of shoot.

FIRE BLIGHT

Why it is spreading
and how to control it

By DWIGHT POWELL
University of Illinois

WHILE fire blight has always been important it is gradually becoming the number one apple disease in the midwestern orchards. Just why this intensity of infection has increased is not fully known. For one reason, it is apparent that the red sports (which most growers are planting) of certain varieties such as Jonathan, Rome Beauty, and Willow Twig are more susceptible to blight infection. With Jonathan as the main midwestern variety, this is important.

Another possibility is that the use of Bordeaux mixture has gradually been reduced until some states have eliminated it entirely from the summer apple program. The repeated applications of weak Bordeaux sprays during the summer in the past years may have had an adverse effect on the survival and development of blight cankers. This, of course, is merely conjecture.

A third reason for the increased intensity of fire blight is that pruning labor is becoming more difficult to secure each year. With many orchards not pruned quite as efficiently as they should be more blight inoculum may be carried over during the winter.

A fourth suggestion is that the present weather cycle is ideal for fire blight infections.

A fifth possibility is that orchards have been more heavily fertilized in

recent years. Economic studies have shown that the production level has not decreased in proportion to the tree population. This production increase per tree means that the present trees are more vigorous and thus more susceptible to blight infection.

We do have some knowledge of the fire blight organism. It is a bacterium (*Erwinia amylovora*) and winters over in cankers either on small limbs or twigs or in trunk lesions. During each infective period new holdover cankers are formed although only a small percentage of such lesions will survive the winter months and be active the next year.

It is known that during the early spring months when the trees start to bloom the live cankers will ooze bacteria which are disseminated to new infective areas by wind, rain, and insects. The newly opened blossoms are most susceptible to infection but the organism may also invade the new succulent leaves and shoots. Once infection is established the organism multiplies rapidly and by working its way through the intercellular areas of the plant tissue disrupts the normal tissue processes causing death to the

(Continued on page 42)

Photo at right shows drops of ooze on Bartlett pear shoot containing millions of bacteria (right). Discoloration of tissue due to advance of infection (left).



AMERICAN FRUIT GROWER

Spraying for DISEASE CONTROL

By JOHN C. DUNEGAN, U. S. Department of Agriculture

PEAR blight, apple scab, frog-eye leaf spot, sooty blotch, black rot, and a fruit spot caused by *Botryosphaeria ribis*, the last of little significance since 1925, were important problems confronting the apple grower in 1952. Because of the dry weather, bacterial spot, brown rot, and scab caused little damage to the southern peach crop, and peach anthracnose was of no importance in Georgia but did cause minor damage in South Carolina. An interesting



Top—Caterpillar Tractor pulling a modern 500-gal. John Bean sprayer.
Bottom—The old-fashioned, barrel-type sprayer. USDA photograph.



pathological development in Georgia was the development after summer rains broke the drought, of *Clitocybe tabescens*, a mushroom, as the fruiting body of a white mycelium associated with the decay of peach roots.

The importance of eliminating primary infections was apparent in 1952. Apple growers who started their spraying promptly controlled the apple scab fungus in spite of the prolonged rains. Growers who allowed the primary infections to become established had their fruit spotted and deformed, their crop reduced in size, and fruit-bud formation for 1953 impaired through loss of leaves. The control of primary infections is a cardinal principle that should be the goal of every fruit grower.

Materials

Lime-sulfur — Formerly used as the standard material for the control of the apple scab fungus lime-sulfur has been supplanted to a considerable

extent in recent years by materials less injurious to plants. Its effect on limiting scab infections during prolonged infection periods was demonstrated again in 1952. In view of the 1952 results many apple growers will return to the use of one application of lime-sulfur in either the delayed dormant or prepink spray. Used in this manner lime-sulfur is a cheap, efficient fungicide that gives excellent protection against primary scab infections with minimum risk of lime-sulfur injury to the trees. Its phytotoxicity precludes its use in later sprays.

Elemental sulfur — The different forms of elemental sulfur used for the control of the apple scab fungus gave variable results in 1952. In orchards where the primary infections had been reduced by lime-sulfur, wettable sulfur powders and pastes gave satisfactory results. In orchards where there were numerous primary infections the various forms of ele-

mental sulfur failed to hold the scab fungus under control.

The trend in apple spraying appears to be either to eliminate elemental sulfur entirely and use organic fungicides or to use mixtures of sulfur and organic materials. There were numerous reports in 1952 of an inferior finish on apples sprayed with elemental sulfur preparations.

Bordeaux Mixture — Because of the injury produced by copper compounds the trend continues toward substituting the organic fungicides for Bordeaux mixture in the summer sprays on apples. The reoccurrence of *Botryosphaeria* spot, especially on the Golden Delicious variety in 1952, poses a difficult problem. This apple variety in addition to being very susceptible to *Botryosphaeria ribis* is readily injured by copper sprays. Some efficient but non-injurious spray compound is urgently needed for use on the Golden Delicious apple.

(Continued on page 39)

Where to Expect

SPRING

By IRVING P. KRICK, Meteorological Consultant

THE year 1952 has set weather records across the country. Record winter snowpack in the Colorado Rockies; searing June heat in the Midwest, South, and East; persistent dry weather in the southeastern states; all are now part of our recorded meteorological history. Already the meteorologists are examining this history for clues that may point to the prospective weather patterns of the coming seasons.

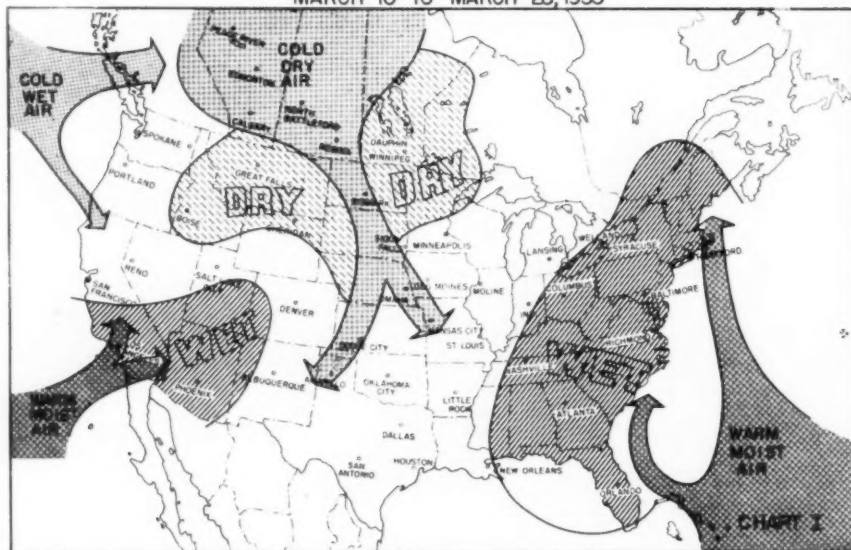
Weather extremes are as familiar to the nation's growers as they are to the meteorologists, for, without exception, the various agricultural interests depend on the daily weather more than any other industry. This aspect of the grower's life has been brought into sharp focus with unceasing regularity as each season passes.

Thus far in the 1952-53 winter there has been a marked contrast in the monthly weather patterns as compared with those of last winter. Last year's persistent cold in the West is not repeating this year. Rather, the cold air flows from the Arctic regions are entering the United States east of the Rocky Mountains, spreading quickly southward and eastward with the western portion of the country experiencing a relatively warm weather regime.

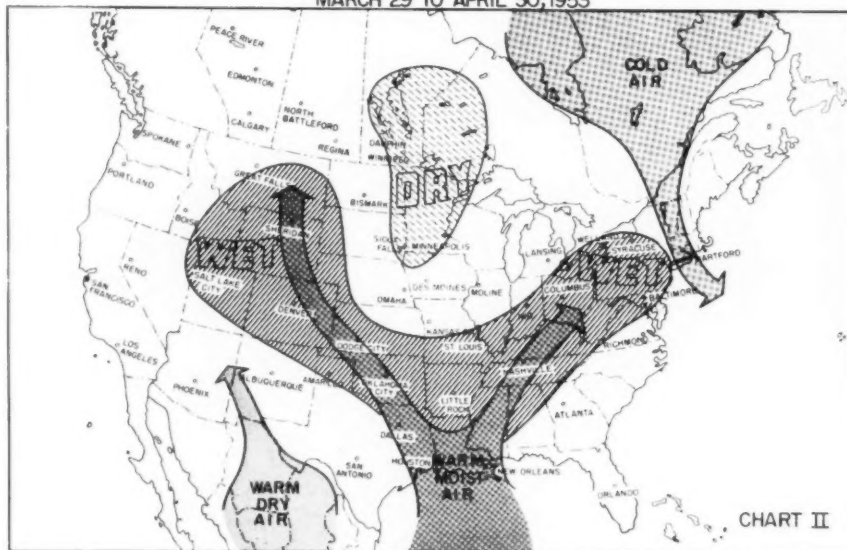
Up until approximately March 28, this tendency for the cold flows to pass east of the Rockies should continue. Chart I gives the temperature and moisture conditions expected to prevail as the end of the dominant winter pattern approaches. The principal weather pattern for the following month of April is shown on Chart II. You will note the eastward shift of the cold air flows and the subsequent intrusion of warm, moist air into the interior of the country from the south. The preliminary outlook for May, 1953, points to a relatively strong flow of cold air southward through the Pacific Northwest with the eastern states remaining warmer than average.

Chart III, giving the expected southern limit of frost, has been designed to show both the frost limits of an average year (dashed line) and the southern frost limit expected this year (solid line). The dotted areas

MARCH 10 TO MARCH 28, 1953



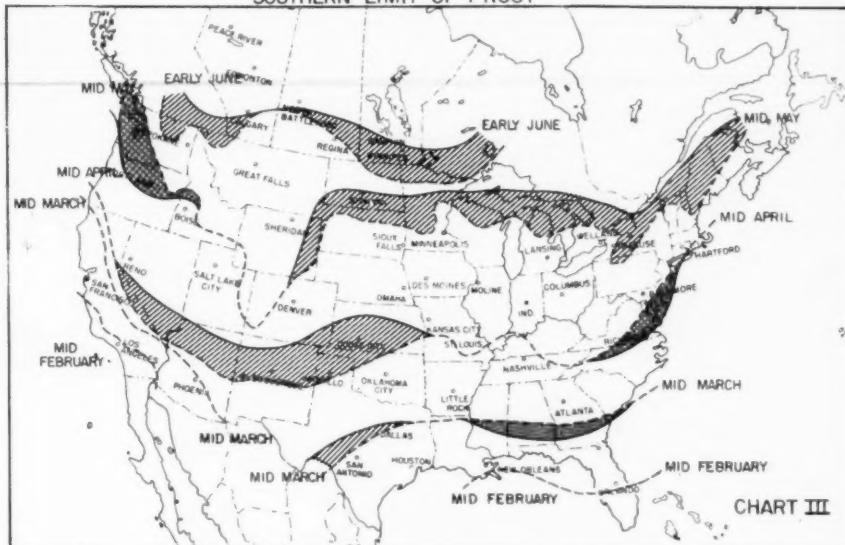
MARCH 29 TO APRIL 30, 1953



FROSTS



SOUTHERN LIMIT OF FROST



ESTIMATED EFFECTS OF 1953 FROST ON FRUIT



indicate zones where the last frost will be later than usual and the slant line shaded areas where it should occur earlier than usual.

Considering the country as a whole, this year's fruit prospects appear more favorable than the crop of 1952. Spring frost injury is anticipated in several parts of the country, but these areas are not extensive nor is the damage expected to be extremely severe. Chart IV has been prepared to show those areas where frost is expected to injure the fruit this year. There are three areas to be considered: One in the Pacific Northwest, another in the northwestern Colorado region, and the third located in Delaware and Maryland.

Warm weather in the Pacific

Northwest in April is likely to advance growth somewhat earlier than usual, thus increasing the threat of possible damage from the May frosts. A similar situation appears likely in the northwestern Colorado area where warmer than usual temperatures in April should be followed by May frosts. Over in the Delaware-Maryland region, the prospects of late spring frosts offer a positive threat of fruit damage.

Fruit production last year in Texas and Oklahoma was substantially reduced by spring frosts which followed on the heels of an abnormally warm winter. With a cold winter and normal to slightly early spring frosts anticipated in this region, the crop should be better this year. THE END

Progress in CONCENTRATE

CONCENTRATE METHOD PREVAILS IN EASTERN NEW YORK

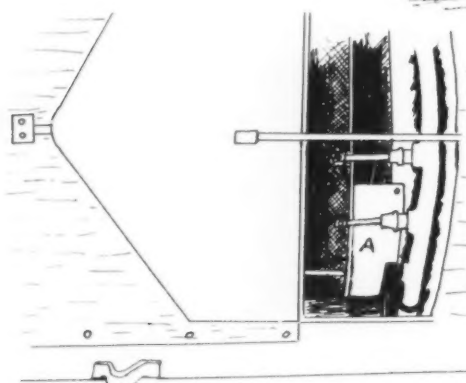
By A. B. BURRELL, Cornell University

HOW are fruit growers reacting to concentrate spraying in eastern United States? My contacts indicate a substantial increase in its use during 1952. The compelling reason has been the necessity of covering the orchard rapidly and with the fewest possible man-hours.

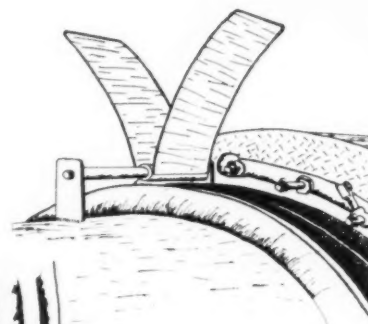
Prolonged spring rains made scab control the dominant problem, and failure to get an application on at just the right time with reference to an infection period often meant scabby leaves or fruit. Without the difficulty of coverage that comes with full foliage, concentrate spraying is at its best during the primary infection period of apple scab—from the time apple blossom buds show green tips until a few weeks after petal fall.

The percentage of growers doing concentrate spraying varies tremendously in different regions. To take examples from my own state, it is the prevailing way of caring for large orchards in eastern New York where it started earlier, while in western New York probably not more than 20 per cent of the large growers have

(Continued on page 44)

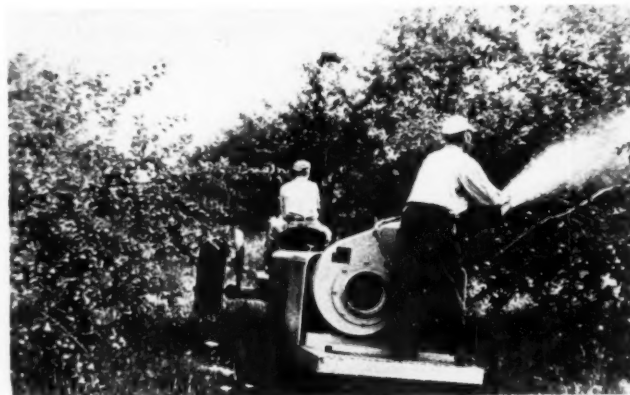


Above: Plate (A) closing one side of air outlet of Speed sprayer has been removed by some growers for greater horizontal carry and better coverage of low branches in more distant parts of tree. Where some elevation of spray is required a plate covering the full eight inches of the opening at bottom is substituted (not shown in sketch). It is given the curvature of the outer edges of the air foils. Bottom of improvised plate is



held in position by tilting hinged deflector which is part of original machine. Even in spring scab sprays, improvised plate never would extend more than half as high as plate A.

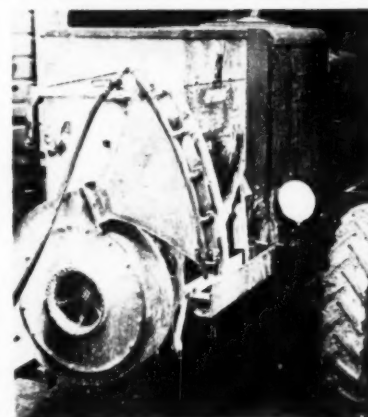
Above: V-shaped deflector at top of Speed sprayer air outlet in two-side delivery pushes spray into top centers of trees instead of allowing it to be partially wasted in the open space above machine. In this model, originated by Ligotino Bros., fruit growers at New Paltz, N. Y., the "V" may be widened or narrowed, slid out of the air stream when not needed, or slid beneath the nozzles to completely close the top of the air outlet for wide, low spraying. A set-screw, not shown, holds each wing in any desired position on the shaft.



A hand-operated, round outlet model of concentrate sprayer.



Above—Such concentrate machines as this Buffalo Turbine are light and versatile. Below—Niagara concentrate sprayer with fixed outlet for one-man operation.



AMERICAN FRUIT GROWER

SPRAYING

MICHIGAN GROWERS REDUCE SPRAY COSTS, EXTEND USE TO SMALL FRUITS

By ARTHUR E. MITCHELL, Michigan State College



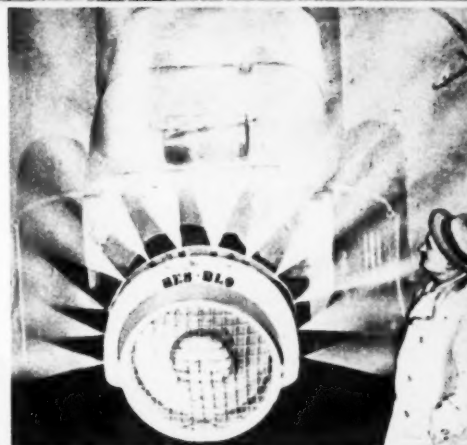
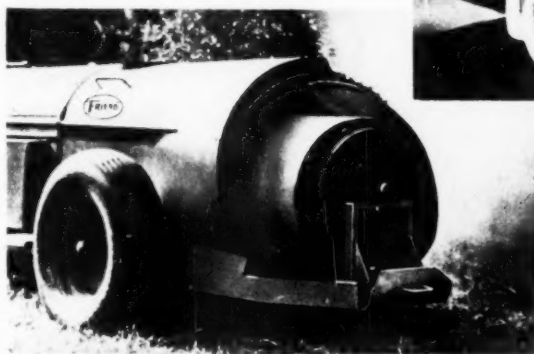
Caterpillar Diesel D4 pulls a 500-gallon Myers automatic sprayer in apple orchard.

CONCENTRATE spraying is being accepted very rapidly by Michigan fruit growers as a means of reducing the high costs of fruit production. Experimental work in this method of spray application was started in a limited way on apples in 1947. During the growing seasons of 1948 and 1949 more complete studies were made using 2X and 10X spray mixtures (2 times and 10 times conventional mixtures) and reducing the gallonage applied per tree to one-half and one-tenth the amount ordinarily used.

Thus, apple trees requiring 20 gallons of spray in dilute form received 10 gallons and two gallons per application in concentrate form. Even though weather conditions in Michigan were favorable for the develop-

ment of apple scab and the buildup of insects, the results of this study were good.

Historically, H. T. Nelson and C. C. Taylor, located in Albion, were probably the first fruit growers in Michigan to use concentrate spraying on tree fruits in a commercial way. That was four years ago, in 1949. When they first started this program, both conventional spraying and concentrate spraying were



Sprayers shown left to right are the Hurst Aqua-Jet blower attachment, the Friend air-blast sprayer, and the Besler air-blast conversion unit.



used. But, in 1950 the entire pest control program was handled successfully with concentrate spraying.

During the late winter of 1949-1950 Leon Pierson in Ionia County and J. E. Duncan of Ida purchased concentrate sprayers. Upon delivery of their new machines, they discontinued the use of conventional spray-

ing in certain blocks of apples in their bearing orchards and embarked on a 4X to 10X concentrate program.

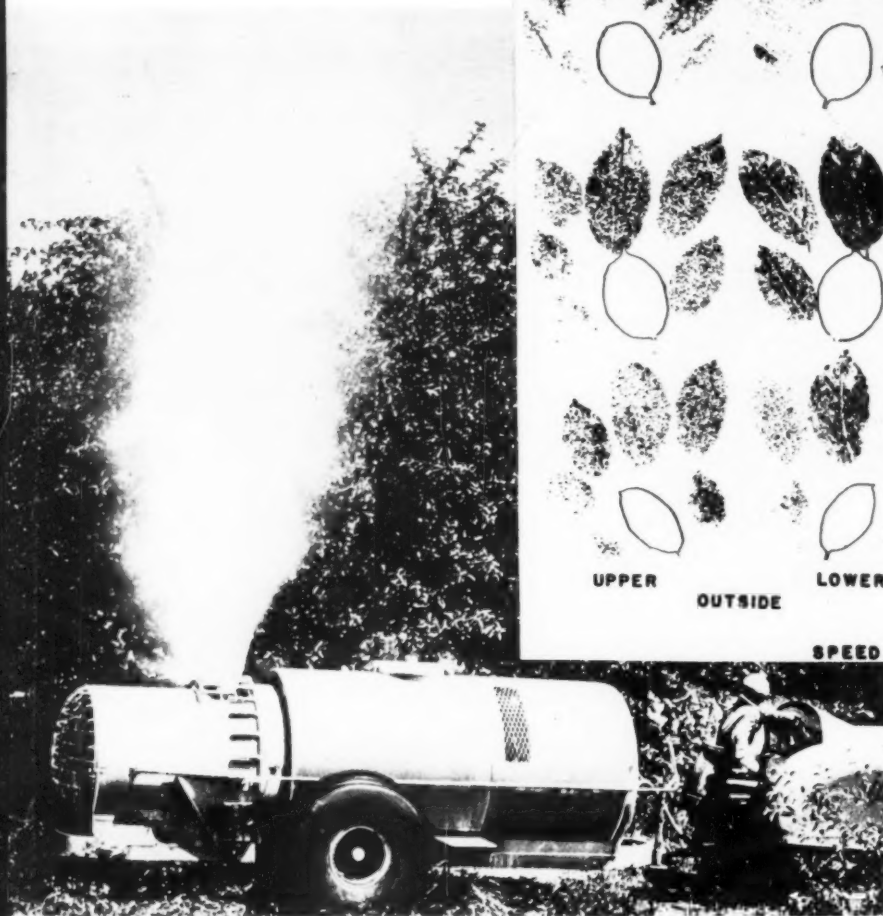
After evaluation of the fruit upon completion of harvest, Mr. Pierson made the following comment: "We are very much pleased with our re-

(Continued on page 22)

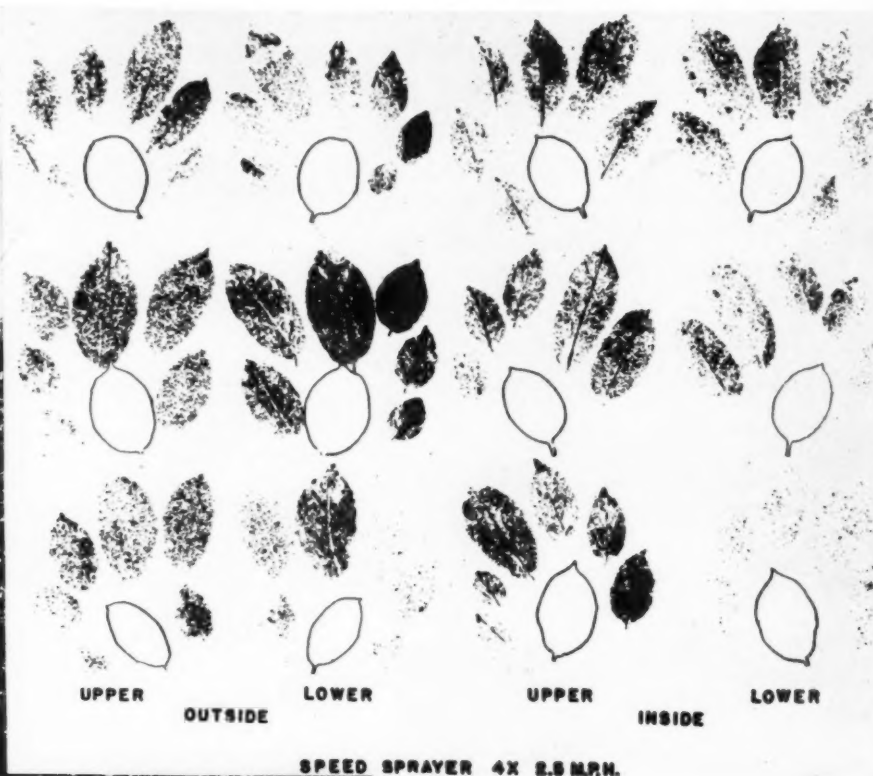
Progress in CONCENTRATE SPRAYING

(Continued from page 21)

sults from concentrate spraying in 1950. We were able to cover our orchards much faster and more easily than by dilute spraying. A great deal of our spraying was done at



A John Bean Speed sprayer is shown above covering several large bearing apple trees.



Prints of spur leaves taken randomly from an apple tree sprayed with lead arsenate at 4X concentration. Darkest leaves indicate heaviest deposits of lead arsenate.

night at which time conditions were ideal for good coverage.

"Our greatest saving was in time required to make applications. However, we feel that we did save on spray materials by not overspraying."

The experiences of Mr. Duncan were of a similar nature. He stated: "We are very much pleased with our venture in using concentrate sprays. We had no difficulty controlling pests, our spraying costs were reduced, and the quality of our fruit was as good if not better than in past years owing to less spray injury."

The number of growers pioneering in this new method of spraying grew slowly each year, but progress

was healthy. No person converting to concentrate spraying suffered severe losses as a result of the change. Some mistakes were made but they were recognized and corrected.

One thing, however, soon became apparent and that was the need for more drastic pruning than was commonly practiced. This need was determined by making prints of leaves taken from sprayed trees which were pruned lightly, moderately, and heavily. These studies were made both in growers' orchards and in the experimental orchards of Michigan State College, and the answer was the same in every case.

The findings were that to obtain favorable results from concentrate

spraying it was necessary to adapt the tree by pruning to the type of sprayer being used. Where small capacity air-blast sprayers were being employed, the trees required more pruning than for the large air-blast sprayers. It was found also that the rate of travel through the orchard using the smaller air-blast machines had to be slower than for the larger sprayers, to obtain comparable spray coverage.

Coincident with this need for heavier pruning was the demand for larger apples. Heavier pruning contributed to meeting this demand, and at the same time reduced spraying costs by reducing the amount of spray needed to cover the more open trees.

To mechanize the fruit industry still more the orchardist found a place for power pruners and chain saws in his management program. All of these factors coming within a

(Continued on page 53)

THOSE PESKY PESTS!

**But they keep us
on our toes**

By **ELDON S. BANTA**

SPRAYING is a dependable feature in orcharding only when the correct materials are used at the right time and in the proper manner. There seem to be two major considerations in designing a satisfactory spray program: 1) it must control all pests, and 2) it must do so economically. We juggle materials, equipment, methods, and timing of our applications in an effort to arrive at the maximum efficiency of control and least possible cost.

On our southwestern Ohio fruit farm we tried to do this in 1952. Some procedures were successful, others were total failures. There are always reasons for both. I know now why our failures occurred in 1952. But I am not so certain of the apparent successes of our spray programs.

The chart on page 52 gives the spray schedule we followed in most of

the orchard. On the whole it was successful, even though it departs from the state recommended schedule. Codling moth barely made any appearance, red mites appeared only in very small bands and then in very late season, leaf rollers could find few places worth chewing, and curculios had to beat it out of the orchard.

Just one pest knew our weak link—the rosy aphid. And how he made a mess of things! At harvesttime we figured he had taken just about 20 per cent of our apple crop. This was the first time rosy aphids ever took serious toll of our crop. Last season will probably be remembered by many as the aphid year, for this insect was prevalent statewide, doing more damage in some areas than in others. It also did more damage where no special spray was applied against it. At Banta's Fruit Farm that was the case. I had hoped, after seeing the damage done after petal fall, that EPN 300 would control the aphids. Sadly I discovered this to be the wrong material.

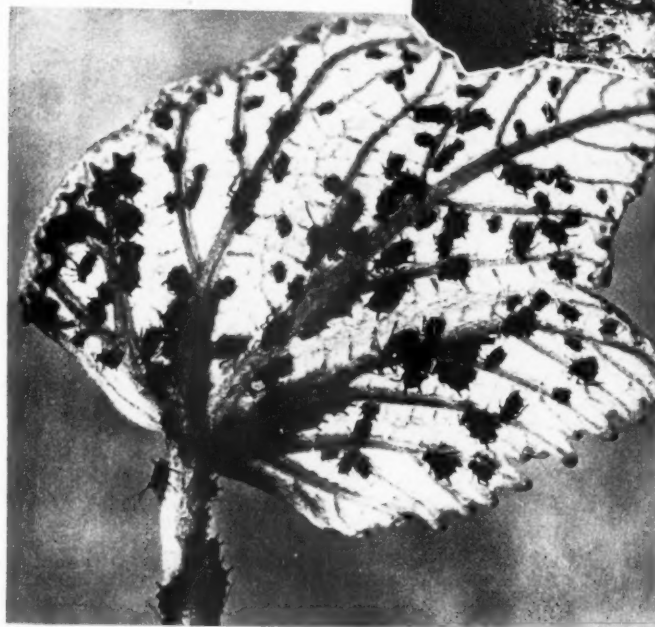
Parathion will control aphids very well and this season we shall use it in the pink or petal fall application whenever the aphids begin to gather in alarming numbers.

Apple scab is our primary disease of apples. The spray schedule we followed kept infection down to the very minimum. The sulfur schedule is one we have followed for the past few seasons with about equal success each season, providing we time applications with rain periods.

Russetting of fruit is a problem in many years. Luckily last season we had the smoothest finish on Golden Delicious we have attained.

We started last season to test some of the newer fungicides for their effect on finish as well as scab control. The schedule was simple. We sprayed trees in prebloom with a mercury compound. Tag, after a rain period rather than before, as

(Continued on page 52)



Growers will remember 1952 as an aphid year. Top—An enemy of the aphid, the syrphid fly, feeds on larval form of the aphid. Center—Greatly enlarged aphid eggs on apple twig. Bottom—Aphids feeding on a grape leaf. Photographs by Lee Jenkins.



Parasite of Japanese beetle in larval form feeds on beetle larva. USDA photo.

NEW METHODS of Pest Control

Systemics and biological
control bear watching

By DAVID G. HALL
U.S. Department of Agriculture

proprietary substance sold widely in the central states some 30 years ago. You bored a hole in the trunk of an apple tree, put in a spoonful of Tre-vax, and plugged it up. All the bugs on the tree supposedly died, and the tree was also cured of any diseases. Many people took a try at this. The chemicals turned out to be harmless to the trees—and insects and diseases as well.

There has been considerable progress recently in this line of research. New organic phosphorus compounds have been developed. When these are applied to the soil around the roots or applied to leaves, they are picked up by the sap stream of the plants and carried to places where insects feed. So far, experiments show that several species of mites and aphids on some crops can be controlled very well by this procedure. Entomologists last summer found that the methyl group of a few of these systemic chemicals killed some of the chewing insects, while the older ethyl group apparently affected only sucking insects.

Just what the effect these new systemic chemicals might have on consumers eating fruits from treated plants is a matter for the researchers. This obviously is a point that must be settled before fruit growers will be much interested in putting these new insecticides into their control practices.

Experimental work with such chemicals on fruit trees will be tedious and time consuming. Although new developments are coming steadily into this field of research, so far there appears no reason to think the new chemicals mean a radically new type of mite or aphid control in the fruit grower's future list of major bug-killing weapons. But the chance exists.

New biological control methods?

—These methods have furnished much to fruit growers in the past. Insects that eat up or live at the expense of other insects is a phenomenon almost as old as nature.

Some of the entomologist's most spectacular successes have been with biological control. The Vedalia beetle, brought into California from Australia in the late 1800's, saved the citrus industry in that state. A mealy bug threatened the apple industry of the Shenandoah Valley, Virginia, about 15 years ago, and entomologists imported parasites into the area that ended the trouble.

Entomologists search all the time for possibilities in biological control. The trouble with biological control is, many insects that damage fruits must be controlled almost 100 per cent, otherwise the fruit might not be marketable. When a parasite kills all of its hosts, it also kills off its own future. This means biological control is of service to fruit growers only in cases where complete control of the pest may not be essential—for example, in the cases of mites, aphids, mealy bugs, or the like. Other more certain methods must be used in the case of insects that damage fruit itself, like the codling moth, red-banded leaf roller, or plum curculio.

Success in the use of beneficial insects will continue, none the less, although progress in this field is always slow and uncertain. The most hopeful biological control possibility on our fruit insect control horizon may lie in the practical use of certain insect diseases. This is a radically new approach to the problem, being only a few years old.

Most insects have diseases, just as humans and animals do. Some of these diseases are caused by viruses, others by bacteria. An outbreak of the alfalfa caterpillar recently was controlled easily in California by applying a spray from an airplane. The spray was water containing juices of caterpillars that had died of one of their own diseases. In another similar set of experiments, the entomologists controlled an outbreak of sawflies in a pine forest by using a disease.

(Continued on page 59)

IF YOU could pull back a curtain and look into the future of insect control in fruit growing, what do you suppose you'd see? Entirely new practices? We've asked some of the top entomologists to look ahead for us and here's what they think they see.

Electronics?—Chances are very much against any presently-known method of radioactivity or electronics taking the place of current insect control procedures. A faint chance exists that engineers may come up with something entirely new—something entomologists might adapt to the orchard. Nothing in this field is seen on the present horizon.

If anyone tries to sell you some kind of electrical device or a service that utilizes such devices, remember, you'll be made aware of new developments in this field through your major fruit growing advisers.

Systemics?—Until recently, chemicals that controlled insects infesting the trees by injection also killed the trees as well as the insects.

This is an old entomological hope—to be able to inject chemicals into the sap stream of a plant to kill insects later feeding upon it. Do you remember "Trevax?" This was a

SPRAYING APPLES

- TO THIN
- TO FERTILIZE
- TO CONTROL DROP

By M. B. HOFFMAN
Cornell University

IN recent years we have heard a lot about sprays to thin the crop, to fertilize or feed trees through leaves, and to control drop during harvest. These might be considered special sprays to meet a specific need in one or more particular areas. Some may be adapted or worthwhile only on certain varieties—this, depending on the season, locality, or other factors.

All growers recognize the value of thinning apples when a heavy set occurs. Hand thinning is slow, expensive, and cannot be accomplished early enough to realize all possible benefits from thinning. For these reasons attempts to develop a satisfactory method of spray thinning have been underway for over a decade. The extent to which the practice is now used commercially varies greatly with the section, bloom weather, and varieties grown.

Apples can be thinned with dinitro formulation (DN's) or hormone preparations. For best results the DN spray should be applied as near the full bloom stage as possible. By this time the more advanced flowers have been open for two or three days. However, under certain conditions and with many varieties an application made one to three days following full bloom has proved about as effective as when applied at full bloom stage.

The exact timing and concentration should depend on the variety, temperature, and activity of pollinating insects. The concentration of DN for thinning ranges from 1 to 2 pints (liquid or slurry) or ½ to 1 pound (powder) per 100 gallons of water.

Naphthaleneacetic acid (NAA) will reduce the set of apples when applied during the late bloom, at petal fall, or two to three weeks after petal fall. Thus, there is much more leeway in timing this spray for thinning than is the case with the DN bloom



Spray thinning Yellow Transparent. Left: unsprayed check twig. Right: comparable twig sprayed with naphthalenacetamide (40 p.p.m.). Note larger fruit, foliage.



ACID 15 PPM AMIDE 30 PPM
NAA applied at petal fall on Duchess resulted in epinasty and dwarfing of foliage (left). Normal foliage followed application of naphthalenacetamide (right).

spray. In areas subject to killing frost the treatment can be delayed until such danger is past.

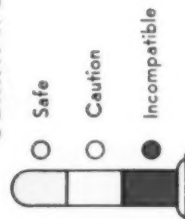
From the standpoint of obtaining maximum benefits in fruit size and annual bearing, the earlier the thinning can be accomplished the better the results will be. For this reason it would be better to apply the NAA spray during the late bloom or at the petal fall stage if a heavy set appears reasonably certain and there is no longer danger of frost.

However, this early application of NAA may cause serious leaf epinasty and dwarfing of both foliage and shoot growth. While some of the early varieties such as Yellow Transparent, Duchess, and Early McIntosh seem very susceptible to this type of injury, most varieties show moderate amounts, especially if cool, cloudy

(Continued on page 48)

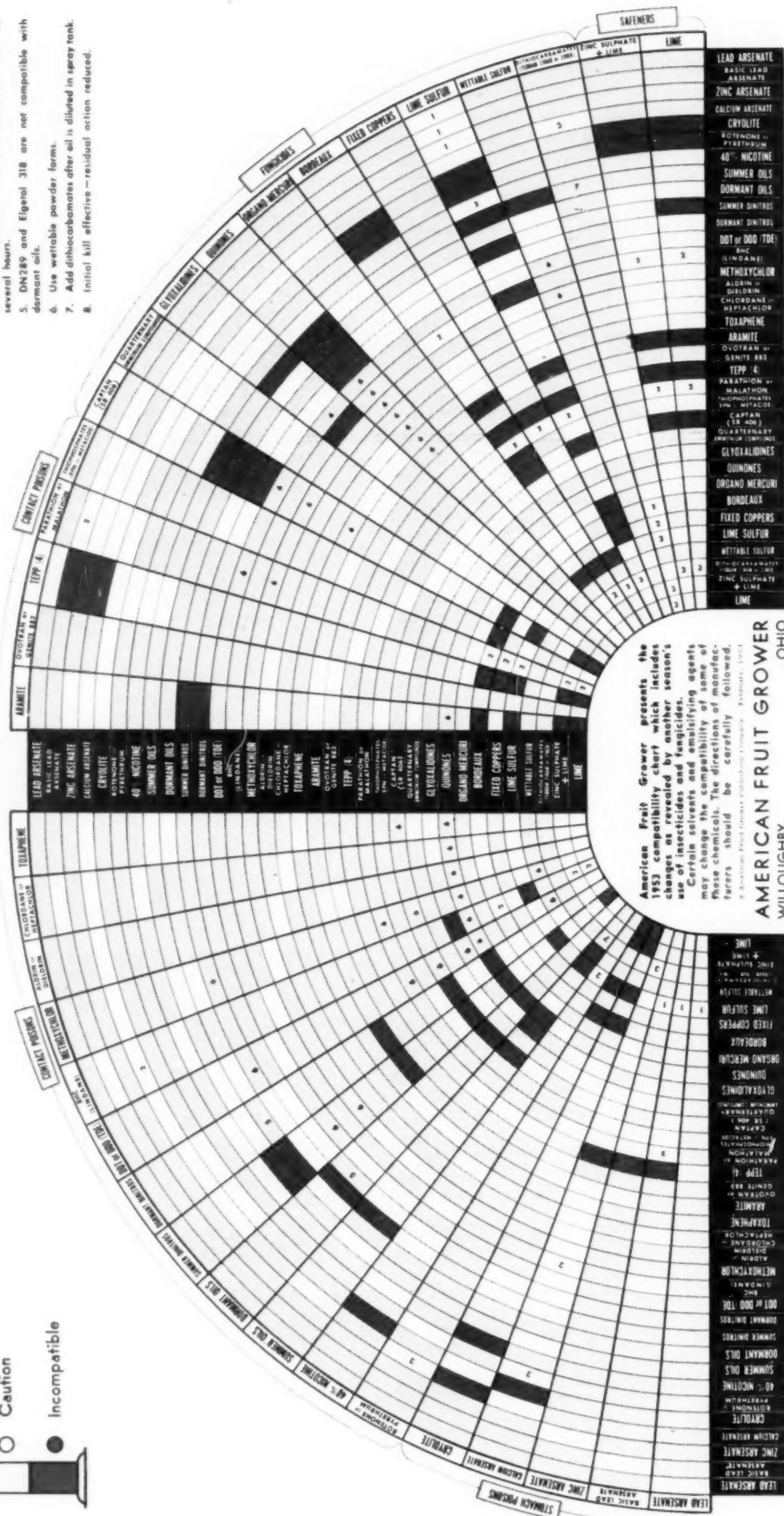
COMPATIBILITY CHART FOR INSECTICIDES AND FUNGICIDES FOR 1953

The SPRAY CONTROL SEMAPHORE



KEY

1. Decomposes on standing. Best procedure is to add lime sulfur to spray mixture before adding arsenical.
2. Decomposes on standing.
3. Not recommended except as directed by manufacturer. Presence of calcium compounds may change residual-fungicidal nature of dithiocarbamates to eradicant type without residual action.
4. When mixed with water, decomposes after standing several hours.
5. DN289 and Egelon 318 are not compatible with dormant oils.
6. Use wettable powder forms.
7. Add dithiocarbamates after oil is diluted in spray tank.
8. Initial kill effective—residual action reduced.



American Fruit Grower presents the 1953 compatibility chart which includes changes as revealed by another season's use of insecticides and fungicides. Certain solvents and emulsifying agents may change the compatibility of some of these chemicals. Be carefully followed.

AMERICAN FRUIT GROWER OHIO WILLOUGHBY.

The 1953 Compatibility Chart

ON the opposite page is the seventh edition of the AMERICAN FRUIT GROWER Compatibility Chart which was first published in 1947 to help growers solve the mysteries of what chemicals may be mixed in the spray tank and applied in combination to avoid extra spray applications. In 1947 combinations of 24 spray chemicals were covered, and the list has grown to 40 on the 1953 chart.

The 1,600 different compatibility combinations listed on the chart are the result of countless years of testing and experience by leading spray specialists in all the major fruit growing areas. Each year these combinations are revised in the light of the previous season's experience so that only the latest information is included.

Where necessary a key number is included in the color block for the particular combination being considered. The number refers to additional information in the upper right-hand corner of the chart. For instance, some combinations are safe to use if applied immediately after mixing. If allowed to stand for some time, the mixture will lose its effectiveness.

It is wise to bear in mind that sometimes the solvent or emulsifying agent used by the manufacturer may change the compatibility of the basic material. For instance, in mixing DDT with parathion it is wise to use wettable powder formulations rather than liquid formulations. Mixtures of different types of solvents or emulsifying agents may make the mixture no longer physically suitable for spray application and pumps and nozzles will not handle the mixture satisfactorily. A good rule to bear in mind is to use liquid formulations by the same manufacturer or when in doubt to use wettable powder forms. THE END

KNOW—DON'T GUESS

AMERICAN FRUIT GROWER'S 1953 Compatibility Chart of Insecticides and Fungicides is available now printed in three colors on heavy Bristol board paper so it can be posted in office, barn, or spray shed for quick, handy reference.

Send 25 cents in cash, money order, or stamps for your copy (quantity prices quoted on request) to:

AMERICAN FRUIT GROWER
Willoughby, Ohio



EVERY GROWER HAS A STAKE IN PESTICIDE LEGISLATION

Watch for new laws to be proposed this year

By LEA S. HITCHNER

IN the coming session of Congress new legislation will probably be submitted bearing on insecticides, fungicides, herbicides, and other agricultural chemicals used for the production of food, feed, and fibre in the United States. This legislation is bound to affect the agricultural producer whether he is growing potatoes, peaches, pomegranates, or pecans.

If this new legislation follows the pattern of a previously submitted bill, it can seriously affect the agriculturist by imposing burdensome restrictions on agricultural chemicals, curtailing research activities, increasing the costs of crop protection and, potentially, it can bring about the seizure of shipments of produce.

If the new legislation follows the recommendations of the Food and Drug Administration, it will, in effect, give that agency the sole and final authority to interpret all research performed with pesticides regardless of the source of scientific data. To vest such broad authority in one agency is extremely dangerous. Research must be free to perform without unnecessary bureaucratic restrictions; and scientists should be able to make their own interpretations of their own research data.

The record shows that scientists of land grant colleges and universities, those of reputable independent toxicological laboratories, and industrial research workers have proved their reliability and ethics in the interpretation of scientific data on pesticides.

The question is whether the scientists of land grant colleges, of independent laboratories, and of other reputable research institutions are going to be permitted to continue their present responsibility for estab-

lishing the best uses for pesticides; or whether that authority shall rest solely with the Food and Drug Administration. The latter situation is, in effect, being proposed in this new legislation.

In order to sell a product in interstate commerce, the pesticide manufacturer must register his label with the Secretary of Agriculture. The secretary has the authority to issue such registration under the Federal Insecticide, Fungicide and Rodenticide Act of 1947.

Also bearing on the marketing and use of agricultural chemicals is the authority vested in the Federal Security Administrator, who operates under authority of the Food, Drug and Cosmetic Act of 1938. The practical administration of this authority is done by the Food and Drug Administration. This agency has the responsibility of policing the purity of our foods and has a relationship to pesticides by their authority to establish and enforce the maximum amount of pesticidal residues permissible on or in foods marketed in interstate commerce.

The establishment of tolerances by the Food and Drug Administration, plus the registration of pesticidal products by the Secretary of Agriculture, was established to protect the public against objectionable residues in foods. If properly enforced, this combination of controls is adequate to protect the public. Although hearings for establishing tolerances were concluded in 1950, the tolerances have not yet been established.

Pesticides have been consistently included with "chemical additives" when discussed by the Delaney Committee and others, and doubtless the new legislation will use this term to include pesticides. This situation will serve to obscure the importance of the bill to agriculturists who have such a huge stake in this proposed legislation.

The author, LEA S. HITCHNER, is executive secretary of the National Agricultural Chemicals Association, Barr Building, Washington 9, D.C.

State NEWS

• Washington Growers Vote to Increase Advertising Fund • West Virginia Seeks to Lower Minimum Weights

WASHINGTON—A large turnout of growers featured the 48th annual meeting of the Washington State Horticultural Association at Yakima.

In his talk, "Can the Northwest Compete with the East in Producing Apples," Dr. A. J. Heinicke of the New York State Agricultural Experiment Station concluded that it seems reasonably certain that both sections of the country will make the necessary adjustments to continue in business for a long time.

Dr. Heinicke's report on controlled atmosphere storage of McIntosh apples excited considerable comment. He told how oxygen and carbon dioxide content of air in these storages is modified so that the apples will keep crisp and firm well beyond their normal life in regular cold storage.

In precedent-breaking action, Washington growers voted to raise the apple advertising tax from a maximum of three cents a box to six cents. However, it also was voted that only a one-cent raise be permitted at any one time, and only by a majority vote of the state's apple growers. A leader in the movement for the raise was Stanley Dwinell of Oroville.

Dr. James Marshall of the Canadian Department of Agriculture at Summerland, B.C., spoke to a full house on concentrate spraying. He pointed out that British Columbia growers are considerably ahead of their neighbors to the south in mechanizing their spraying operation through the use of blower-type concentrate sprayers.

Dr. Marshall stated that an axial-type flow fan is the most efficient for concentrate applications, also that excessive erosion of nozzle discs, swirl plates, and pressure regulator parts has been largely overcome by the use of cemented tungsten carbide in the manufacture of these parts. Adequate pruning is essential for good results from concentrate spraying, he remarked.

Reuben Benz, sales agent for Cowiche Growers, Inc., showed how rising rail rates have affected marketing of Washington apples. Before 1950, 56 per cent of Washington apples were unloaded east of the Mississippi. In 1951 the unloads had dropped to 40 per cent.

WEST VIRGINIA—Fruit growers in the Martinsburg section hope to get a new state law enacted which will lower the minimum weight requirements for bushels of apples and peaches and quarts of strawberries.

Four legislators—State Senators Ralph Bean and Clarence E. Martin, Jr., and Delegates Stewart Wright and W. P. C. Perry—promised to back legislation making this possible.

The plan was presented to them by a committee from the West Virginia Horticultural Society and representatives of the extension division of West Virginia University.

The group proposes that the minimum weights for a bushel of apples be lowered

The Michigan State Horticultural Society during its recent annual convention at Grand Rapids passed a resolution opposing the action taken by the Federal Trade Commission against Appalachian Apple Service, Inc., Martinsburg, W. Va., and five apple processors in the Appalachian belt whereby these groups are charged with "combining to fix, stabilize and maintain the prices for raw apples used for processing purposes."

to 42 pounds, a bushel of peaches to 45 pounds, and a quart of strawberries to 21 ounces.

Present standard minimum is 48 pounds for apples and peaches and 24 ounces for strawberries.

The fruitmen say these standards were set 30 years ago, when fruit was smaller. To meet the standard minimum with

larger, improved fruit, they added, you have to pack it so tightly that much of it is bruised and becomes a loss to either the packer or the consumer.

CALIFORNIA—A record citrus crop is on the trees—but there is many a slip twixt blossom and box. The experts say there are 13.1 million boxes of lemons in the 1952-53 season crop, and the 1952-53 Navel orange crop is estimated at 14.6 million boxes, Valencias at 28 million, and grapefruit at 2.3 million.

Sunkist Growers, Inc., reports sales of \$165 million during the past crop year, or \$15 million over the previous year. In each of the past five years some 5,000 acres of citrus in southern California have been converted to other uses, including housing developments.—*Jack Pickett.*

FLORIDA—The early and midseason orange crop is now estimated at 42 million boxes and the Valencia crop at 34 million boxes. The estimated grapefruit (Continued on page 30)

FRUIT PEST HANDBOOK

(TWENTIETH OF A SERIES)

APPLE SCAB

APPLE SCAB is the most important fungus disease in all the humid apple sections of the United States and is apt to be particularly prevalent when cool, rainy weather occurs during the blossom period. Unless properly controlled it can destroy the crop, defoliate the trees, and reduce the size of the crop for the succeeding year.

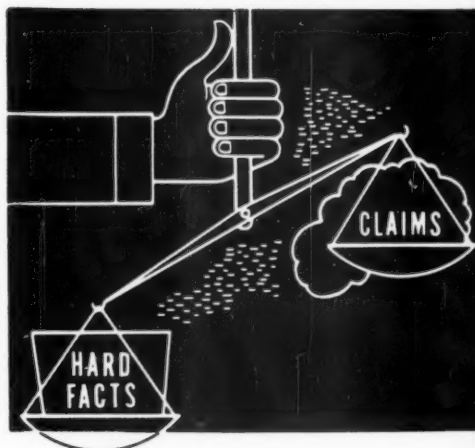
The fungus that causes this disease attacks the leaves, fruit, fruit stems, and occasionally the blossom and twigs. It overwinters in the infected leaves of the previous season and in the spring spores are discharged from these decaying leaves on the ground. These spores are

carried by air currents through the trees and may lodge on the fruit buds and unfolding leaves, where, if moisture is present, they germinate and infect the tissues. Patches of olive-colored fungus growth soon appear on the leaves and young fruit and produce another type of spore that can in turn infect other leaves and fruit.

When the spots are numerous, the leaves may be killed and premature defoliation results. If the spots develop on the fruit stems, as frequently happens in the Delicious variety, many fruits may drop before they reach the size of a (Continued on page 57)

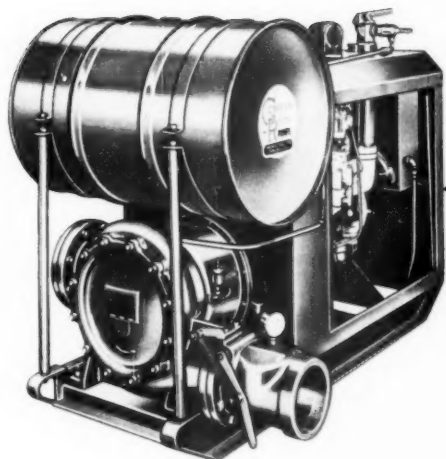


Gnarled and distorted fruits and spotted leaves caused by apple scab fungus.



COMPARE *Irrigation* PUMPS!

WEIGH THESE POINTS BEFORE YOU BUY----



GORMAN-RUPP IRRIGATION PUMPS

Available in many sizes,
heat exchanger cooled or
radiator cooled. GPM
varies with lbs. pressure.
Ratings from 80 GPM at
75 lbs. to 1250 GPM at
125 lbs., or 3000 GPM
at 35 foot head.

Write for
bulletin 9-IR-11.

- COMPARE Gorman-Rupp pumps with all other makes and their performance under field conditions.
- COMPARE For in-line suction and discharge connection and ground level discharge—no elbows or bends.
- COMPARE For full free-opening discharge check valve.
- COMPARE For accessibility of pump interior without disturbing suction and discharge connections.
- COMPARE Life of shaft seal under vacuum.
- COMPARE Large 30 to 50 gallon fuel tank for longer unattended operation.
- COMPARE Gorman-Rupp practical heat exchanger design and extra engine H.P. due to elimination of fan.
- COMPARE Lower maintenance cost because of heat exchanger, shaft-seal under vacuum, absence of fan belt, fan bearings, etc.
- COMPARE The lower operating cost of the Gorman-Rupp.
- COMPARE All these points and finally—Compare the fact that with Gorman-Rupp you get a complete irrigation pump package; pump, engine, exhaust priming device, strainer—ready to go to work.

THEN DECIDE . . .

Performance is what REALLY counts

GORMAN-RUPP IRRIGATION PUMPS

GORMAN-RUPP ORIGINATES — OTHERS IMITATE

THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO

Be Your own WEATHER MAN

1. Predict Frost
2. Predict Minimum Daily Temperature
3. Predict Rain, Wind
4. Locate New Orchards
5. Predict Best Dusting and Spraying Periods
6. Be Forewarned of Unusual Weather

New Taylor registering "High-Low" thermometer helps predict frost by telling highest and lowest temperatures since last setting, plus temperature now. Tiny steel-cored indicators inside tube stay put till reset with magnet. Helps locate orchards by detecting cold zones. Warns when to start smudge pots. \$10



Taylor Ship's Wheel Stormo-guide helps foretell frost and local storms within next 12 to 24 hours. Much easier to use than an ordinary barometer because it gives detailed easy-to-read forecasts for each change in barometric pressure. Handsome walnut case, solid brass spokes, Stormo-guide dial and exclusive altitude adjustment. \$18



\$9.00

Taylor Sling Psychrometer. The scientific instrument weather bureaus use to tell relative humidity. Complete with swivel handle, wet and dry bulb thermometers and protective copper case. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. (Prices slightly higher in Canada.)

**TAYLOR INSTRUMENTS
MEAN ACCURACY FIRST**

CALENDAR OF COMING MEETINGS AND EXHIBITS

Feb. 4-6—Ohio State Horticultural Society annual meeting, Deshler-Wallick Hotel, Columbus.—C. W. Ellenwood, Sec'y, Wooster.

Feb. 5—Vermont State Horticultural Society half-day small fruit and vegetable meeting in conjunction with Vermont Farm Products Show. Annual society meeting to be held first week of April.—C. Lyman Calahan, Ext. Hort., Burlington.

Feb. 5-6—Idaho State Horticultural Society annual meeting, Hotel Boise, Boise.—Anton S. Horn, Sec'y, Boise.

Feb. 4-6—West Virginia Horticultural Society annual meeting, Martinsburg.—Carroll R. Miller, Sec'y, Martinsburg.

Feb. 16-18—National Peach Council annual meeting, Spartanburg, S.C.—M. J. Dorsey, Sec'y, 1502 S. Lincoln, Urbana, Ill.

Aug. 31-Sept. 2—Northern Nut Growers Association annual meeting and tour, Rochester, N.Y.—George Salzer, Vice-Pres., 169 Garford Road, Rochester, N.Y.

STATE NEWS

(Continued from page 28)

crop of 32 million boxes is 4 million less than last season.

Robert S. Edsall, Vero Beach, has assumed his duties as president of the Florida State Horticultural Society, the state's oldest agricultural organization. Other officers elected during the 65th annual meeting of the society include Dr. Ernest L. Spencer, Bradenton, secretary; L. Rogers McLain, Tampa, treasurer; J. R. Graves, Vero Beach, vice-president of the citrus section; and D. W. Riester, Tampa, vice-president of the processing section.—Clyde Beale.

TEXAS—This season's orange production is estimated at one million boxes and grapefruit at 400,000 boxes, compared with the average of 3.6 million boxes of oranges and 16.8 million boxes of grapefruit. These production figures tell more eloquently than words the terrific beating the Texas citrus industry has suffered as a result of freezes in recent years. The industry is gradually rebuilding.

MICHIGAN—The joint meeting of the American Pomological Society and the Michigan State Horticultural Society at Grand Rapids was one of the outstanding meetings of the nation. Over 700 sat down at the banquet, at which the state apple queen and her court were presented and properly rewarded.

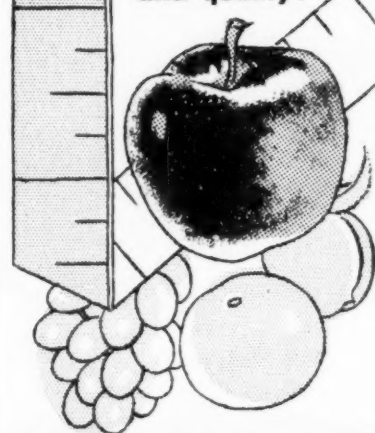
The Ladies' Auxiliary is now a feature of the program. Always a family affair, the Michigan State Horticultural Society meeting is becoming more and more so—adding to its wholesomeness and general all-round usefulness and effectiveness.

Panel discussion on the controversial new regulation regarding defects in the sour cherry brought out the statement from packers that had the new regulation not been in effect when the disastrous windstorm struck the Traverse City area last summer, canners would have been forced to close down their plants. As it was, much sorting was done in the orchard, which made it possible for canning plants to continue their operations.

Mechanical devices and laborsaving equipment were the center of attention. Excellent exhibits were arranged by commercial companies. The lift truck and pallet handling of fruit were discussed and recognized as "musts" in modern orcharding. Concentrate spraying was

(Continued on page 58)

You can
MEASURE
the difference
in yields
and quality!



VIGORO
COMMERCIAL
GROWER

... a special formula
geographically adjusted
for the soils in your area

VIGORO for Commercial Growers is specially made to supply the maximum nutrient requirements of high value crops. All the needed nutrient elements are skillfully balanced in maximum ratio to each other. Predominating soil types in your area have also been considered in its formulation.

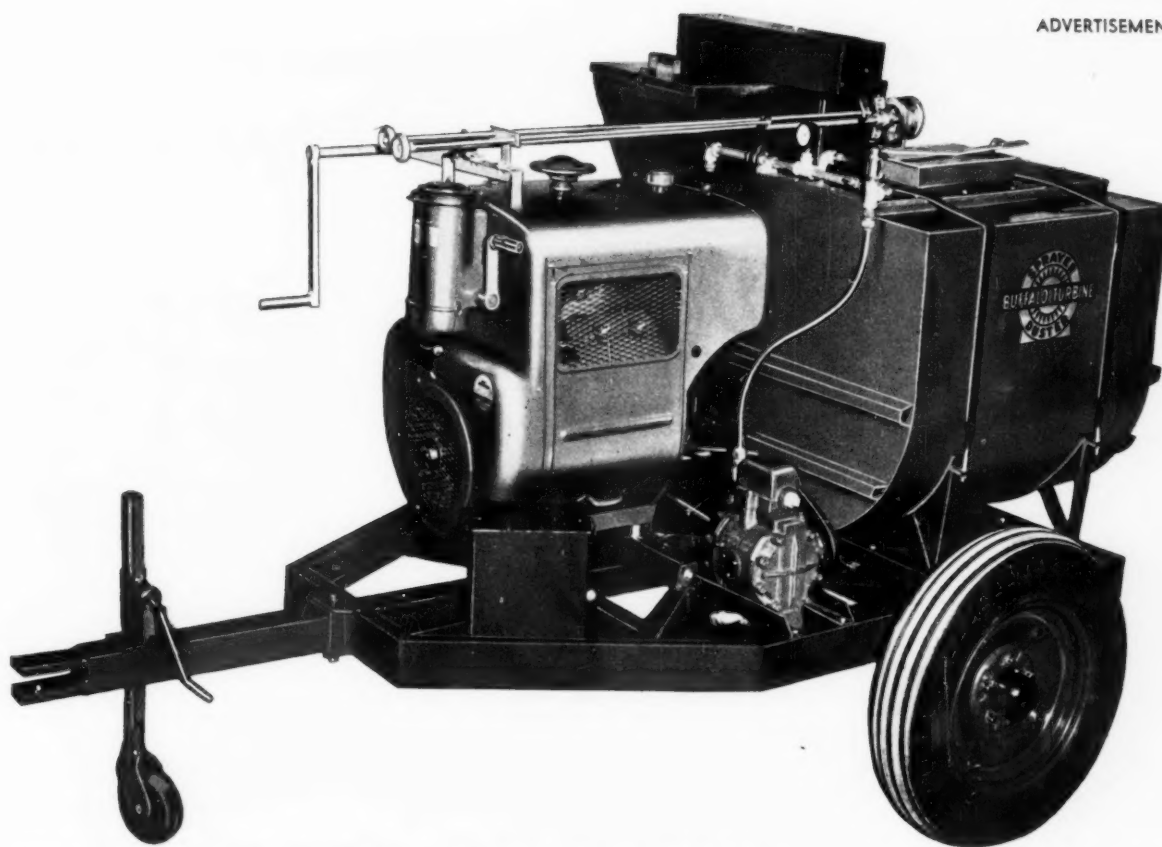
With Vigoro C G you get maximum yields that command top of the market prices. For full information, just drop us a card, mentioning your special crops.

*Vigoro is the trade-mark for Swift & Company's complete, balanced plant food.



Swift & Company, Plant Food Division
U. S. Yards, Chicago 9, Illinois

AMERICAN FRUIT GROWER



WHY GROWERS ARE BUYING CONCENTRATE EQUIPMENT

By M. A. Devereaux

When the idea of developing concentrate spray equipment was first discussed, a number of suggestions were made. These suggestions came from Experiment stations, chemical companies and growers who were particularly interested in reducing the cost of the annual spray bill. In summarizing the outstanding suggestions, we found that the following items were of extreme importance to the growers:

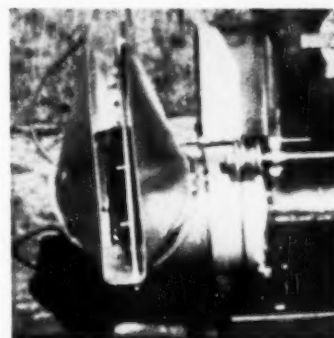
1. Spraying equipment must be light in weight so that it can be operated at any time and under any orchard conditions.
2. Any new sprayer should be constructed so that one man could spray easily.
3. The original cost of the equipment should be reduced substantially.
4. Expensive operation and maintenance must be reduced.
5. The equipment should be constructed to handle concentrate materials which afford greater control and less cost.

The next step was to combine these

This is the third article dealing with concentrate spray equipment. The first two articles described field results and owner reports. This last article by Mr. Devereaux is a description of the equipment which has so completely revolutionized the spraying industry and given increased profits to all growers.

many suggestions into one piece of machinery which would meet all of the requirements. After a good deal of field testing, this was accomplished in the Buffalo Turbine Concentrate Sprayer. The Buffalo Turbine was the first concentrate sprayer manufactured, and today with many improvements is doing a more than adequate job for hundreds of fruit grower owners. The Buffalo Turbine, because it is a concentrate sprayer and because it is designed to meet modern fruit growing conditions, embodies the following important characteristics:

1. 60% less in original cost.
2. The inclusion of a dust bin makes it possible for the grower to dust when necessary.
3. One-man operation.
4. 75% less in weight.
5. 50% less maintenance cost.
6. Can be pulled by the smallest of field tractors.
7. All-steel-plated-liquid tank insuring long service.
8. All moving parts which come in con-

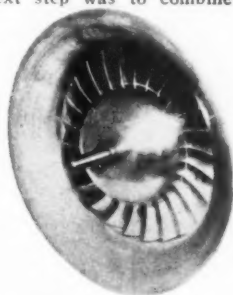


tact with caustic spray materials are stainless steel, brass or plated.

9. Less chemical material is needed per tree.
10. Less run off.
11. Greater penetration.
12. This machine is completely universal—sprays, dusts or both—covers field, orchard crops and is being used successfully for weed or brush control.

All growers who wish to increase their profits in 1953 should have the facts on the Buffalo Turbine. If you will write us today, we will be glad to send you full particulars.

BUFFALO TURBINE
AGRICULTURAL EQUIPMENT COMPANY,
INC.
GOWANDA, NEW YORK



You Can't Control the Weather

BUT YOU CAN CONTROL SCAB



Dusting an apple orchard with Kolodust using a powerful new Niagara Liqui-Duster

KOLODUST IN THE RAIN

YOUR MOST EFFECTIVE WEAPON AGAINST SCAB

Wherever scab is a problem you will find that better growers base their control program on *dusting in the rain* with Kolodust. They hit hard when scab spores are shooting and time the applications for maximum effectiveness.

Kolodust is the only material that penetrates rain drops and adheres to foliage, buds or fruit both during and after the storm.

With a powerful Niagara Orchard Duster you can Kolodust up to 50 acres of mature apple trees in half a day. And you can Kolodust when ground conditions keep sprayers in the

barn. Such timeliness in application assures maximum kill of scab spores—has saved many a crop.

Kolodust is non-caustic, safe to use. Hence, it permits foliage to develop normally. With Kolodust you will benefit from larger leaves, a smoother finish to your fruit and more fruit buds for next year's crop.

Resolve now to *Kolodust in the rain* from dormant right through each scab period. You'll turn "the fruit of your labors" into a highly profitable pack.

Niagara

INSECTICIDES, FUNGICIDES,
ORCHARD DUSTERS

Niagara Chemical Division

FOOD MACHINERY AND CHEMICAL CORPORATION

Middleport, N. Y. Richmond, Calif., Jacksonville, Fla., Tampa, Fla., Pompano, Fla., New Orleans, La., Ayer, Mass., Greenville, Miss., Harlingen, Tex., Pecos, Tex., Yakima, Wash. Subsidiary, Pine Bluff Chemical Co., Pine Bluff, Ark., Canadian Associate: NIAGARA BRAND SPRAY CO., LTD., Burlington, Ontario.



MADE BY AN
EXCLUSIVE PROCESS

Non-caustic Kolodust contains fused Sulphur adsorbed into Bentanite by an exclusive Niagara process to produce a highly penetrating dust that sticks to foliage and fruit through prolonged and heavy rains.



Sparse foliage of peach tree, second from left, indicates injury due to root-knot nematode infestation.

THE NEMATODE MENACE IN WESTERN SOILS

By M. W. ALLEN and J. J. RASKI

University of California

ONE of the most disturbing problems in the production of tree and vine crops is the failure of new plantings to become established and grow vigorously. Many of such failures in western United States, particularly in California, are the direct result of nematode attacks on the root system of the plants. These failures will become an increasingly serious problem as more plantings pass maturity or decline as a result of nematode attacks and it becomes necessary to replant with new trees or vines.

Of course, the immediate problem facing many growers is the decline or dieback of existing orchards and vineyards as a result of plant-parasitic nematode infestations. In some respects this is much more difficult than replant problems because there is no known remedy or treatment that can be used on living trees or vines. All the chemicals which are effective as nematocides are also toxic to plants.

The most common species of nematodes involved in such infestations are the root-knot nematodes, the root-lesion or meadow nematodes, and the citrus nematode.

The presence of root-knot nematodes can be readily recognized by the characteristic galls or knots which

they cause on the roots of plants. These galls interfere with the normal functioning of roots and reduce their efficiency. Also it is common to find, where nematodes are present, that there are virtually no feeder roots since most of these roots are killed by heavy attacks of the nematodes.

Above the ground the plants show unthrifty growth, dieback of small twigs and branches, sparse foliage, and reduced yields.

Fig, grape, peach, and almond are the most susceptible hosts of the root-knot nematodes.

Root-lesion nematodes attack a wide range of plants but are more difficult to detect than root-knot nematodes because they do not cause the formation of galls or knots. The presence of dead feeder roots is very common. On some plants the lesions which are typically produced on the roots can be easily detected but usually require laboratory examination to confirm the presence of the nematodes.

Above-ground symptoms are much like those of root-knot nematode attacks, with sparse and yellow foliage, unthrifty growth, dieback of twigs and small branches, and reduced size

of fruit or nuts as well as lowered yields.

Walnut, cherry, grape, plum, fig, and olive are most frequently found to be injured by the root-lesion nematodes. Other hosts known to be attacked by these nematodes include strawberry, apple, peach, apricot, and bush berries.

The attack of citrus nematode is mostly confined to citrus roots, although it is known to infest olive.

Trees infested by citrus nematode show injury to the bark of the roots which will slough off when examined. The female nematodes lay eggs in a gelatinous matrix outside the root tissues. Soil particles adhere to the matrix and when large numbers of nematodes are present, the roots have a characteristic "dirty" appearance that will not wash off.

Top of tree symptoms include reduced growth, sparse foliage, dieback of twigs and branches, small size of fruit, and reduced yields.

Resistant rootstocks have been developed for some crops. One of the most successful has been the paradox hybrid rootstock used in walnut orchards which are infested with root-lesion nematodes. A flowering peach



Walnut on northern California black rootstock with root-lesion nematodes.



Walnut on resistant paradox stock.



Plum infested with root-lesion nematodes.



Uninfested plum tree, in same orchard.

hybrid rootstock known as S-37 has shown some resistance against root-knot nematode. However, in one locality at least, satisfactory growth of S-37 was obtained only when the soil was treated with a fumigant prior to replanting.

There are several grape rootstocks known to have some degree of resistance to root-knot nematode. Unfortunately, the rootstock 1613, which has been most commonly used in California, has not held up in many areas. Other rootstocks such as Dogridge and Salt Creek, in certain areas at least, do not produce the quality and color necessary for good table grapes though they have shown high resistance to root-knot nematode.

The most promising control appears to be fumigation of soil prior to replanting. Depending on the type of soil, the application of 400 to 800 pounds per acre of D-D usually gives satisfactory results. Heavier soils require the higher dosages. For indi-

vidual replants an area of four to eight feet in diameter should be treated. Larger areas should be treated throughout at 12-inch spacings, especially for plantings such as grapes which are placed close together. An interval of two to four weeks should be allowed between treatment and replanting to avoid injury to the new plants by the chemicals.

Unfortunately the symptoms produced above the ground are not specific for nematode damage and many such problems are often incorrectly diagnosed as a weakness of the soil, poor fertility, salt excess, winter injury or some other cause.

Any weakness or unthrifty growth which does not have an obvious cause should be checked for nematode infestation. Ordinarily the diagnosis should be confirmed in the laboratory and preferably by a specialist trained in nematology.

THE END

CHEMICAL GIRDLING OF GRAPES IN CALIFORNIA

THE University of California is on the trail of a cultural method which might be called chemical girdling of grapes. Actually, the process is to use a hormone spray to obtain the same results as girdling.

Consumers like their table grapes big. One way to increase the size of the fruit is to run a knife around each fruiting cane. This is done just as soon as possible after the normal drop of impotent flowers. The timing must be good or a big labor job is wasted.

The use of a chemical spray is an attempt to get away from this big hand labor job. If the knife job is done correctly, the cane is cut down through the bark and cambium layers. This light cut prevents the food manufactured in the leaves from being transported down to the roots. As a consequence more of the food energy is stored in the forming fruit.

Dr. J. R. Weaver of the University of California tried some 20 different

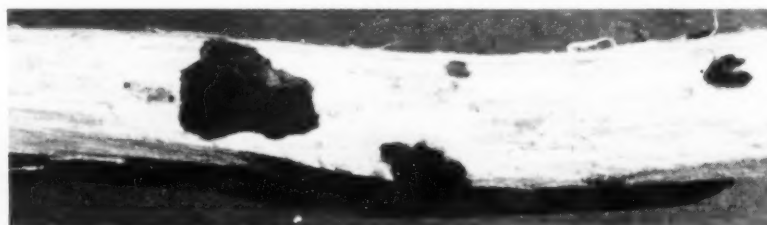
hormones on grapes and is settled, for the present, on 4-chlorophenoxyacetic acid.

The spray applied in a concentration of 15 to 20 parts per million of water must hit the berries to be effective. Some Thompson Seedless grapes shown to a large meeting of grape growers on the university campus were one-third greater in berry weight than unsprayed or ungirdled grapes.

The spray was tried at several places up and down the state with varying results. Apparently such things as air temperature and other factors influence the action of hormones, but this chemical girdling has been successful in enough instances to stimulate the university to try and work out the details for commercial application.

It is not impossible that an acre of grapes could be chemically girdled for as little as 50 cents, the cost of the hormone material.

THE END



External bark has been removed from this northern California black walnut root to show typical lesions caused by root-lesion nematode.

WESTERN EDITION AMERICAN FRUIT GROWER



Spray thinning with a concentrate sprayer in British Columbia. Blower is powered with a 20 h.p. gas engine and machine can spray an acre of fruit trees in 35 minutes.

SPRAY THINNING IN BRITISH COLUMBIA

By D. V. FISHER

Summerland, B. C., Experimental Station

IN the Okanagan Valley of British Columbia most apple growers now rely on chemicals to do the major part of their thinning. Hand thinning that would cost \$3 per mature tree can be done with chemical sprays for 35 cents.

The purpose of chemical thinning is to kill a large percentage of the blossom and thus reduce the fruit set to a quantity which the tree can develop to a desirable size at maturity. The chief advantage of chemical thinning over hand thinning, apart from the great saving in labor, is that surplus fruits are removed at or slightly after bloom time, not after they have reached a size of an inch or more and have thus depleted the tree of valuable food materials. By removal of surplus fruits at the blossom stage, the tree has a greatly increased chance of producing fruit buds for the following season's crop. In fact, many orchards with marked biennial bearing tendencies have been converted to the annual bearing condition as a result of several years of chemical thinning.

Chemical thinning of apples may be performed at two different stages of growth depending on whether the job is to be done with dinitro-cresolates at full bloom or with hormones

at seven to 14 days following full bloom.

The sodium salt of dinitro-ortho-cresol (Na DNOC) is most commonly used to thin apples at full bloom. This material, sold under different brand names in liquid form containing 20 per cent of sodium dinitro-ortho-cresolate, is applied as a drenching spray containing one to one and one-half pints Na DNOC per 100 gallons of water. Between 800 and 1,000 gallons are required to spray an acre of mature apple trees. Where a concentrate sprayer is used a similar amount of Na DNOC is applied per acre, but with only about one-tenth the volume of water.

A few hours after they have been sprayed with dinitro-cresolates blossoms and trees look very sad indeed. The profusion of showy bloom appears yellow and seared, and the trees look as if they had been severely scorched. This is the reason growers are advised to go on a fishing trip for two weeks after spraying. It is quite true that at this stage some young leaves are damaged by the spray, and the crop frequently appears to be overthinned, but such appearances are deceptive and transitory. The tree recovers rapidly and soon shows no ill effects.

The stage of bloom at which the spray is applied is important. Spraying should commence when 90 to 95 per cent of the bloom is open or when the first petals drop from a light tapping of the limbs. At this stage the king bloom (terminal flower in the cluster) has been pollinated, but many of the later opening side blooms have not been pollinated or have been so recently pollinated as to be readily susceptible to killing. The desired effect, therefore, is to kill all side blooms while retaining, uninjured, the young fruit set from the king bloom.

In practice, the selection of blooms to be killed and blooms expected to set fruit does not always work out exactly as intended, but in the tree as a whole, a large number of flowers are killed and prevented from setting fruit. The killing effect of the dinitro-cresolate spray is thought to occur in two ways: first by killing the pollen grains on the stigmas of the newly opened flowers and secondly through a "shock effect" upon the life processes of the flower and young fruit.

Blossom thinning with dinitro-cresolates should only be used on mature trees carrying a heavy bloom. Young trees and light crop trees do not require thinning and there is a danger that chemical thinning may reduce the crop on such trees to almost nil. Trees low in vigor are likewise liable to be overthinned by Na DNOC sprays. Concentrations of Na DNOC should be reduced by a third for Delicious and Rome Beauty owing to danger of overthinning these varieties. In cool, showery weather spray concentrations should also be reduced by 25 per cent to prevent excessive thinning of blossoms.

Although the recommendations presented in this article are based on extensive experimental and commercial experience, it should be clearly understood that the results of chemical thinning are somewhat unpredictable. This is because such variables as weather, tree vigor, adequacy of pollination, variety, spray concentration, efficiency of the machine and time of application influence the effectiveness of the spray thinning program.

Most chemically thinned trees later require a small amount of hand thinning to break up clusters of fruit that have been missed. In some cases a proportion of the king fruits may even have to be removed. This thinning should not take place until just after the June drop has occurred or about 40 days from full bloom. Furthermore, it should be borne in mind that because of the advantage gained through early elimination of surplus apples, chemically thinned trees can carry 15 to 20 per cent more fruit to satisfactory maturity. **THE END**

Pacific

NEWS AND VIEWS

O. A. Hallberg, grower and canner in the Sebastapol area of California, started processing apples by drying in 1897, and in 1946 began canning applesauce. Today, he and his two sons, Bob, orchard manager, and Don, cannery superintendent, are big factors in the apple cannery business.

Terramycin, an antibiotic effective against human diseases, may find a place in agriculture if the work of Dr. Louis A. Mickell proves correct. He reports terramycin stimulates plant growth by sizable amounts. Penicillin gave similar results in tests where treated radishes grew twice to three times as large as untreated plants.

A. D. Goodwin & Son, Manteca, Calif., have fed 100 tons of almond hulls to their Hereford cattle. Almond hulls, formerly considered valueless, are now worth \$16 a ton.

Two thousand ballots were mailed in January to as many Yakima Valley apple growers for the purpose of electing a new member to the Washington State Apple Commission to succeed Walter Martin of Wapato.

Thomas Melvin, superintendent of the Stilwater Orchards near Courtland, Calif., is supervising 70 Filipino pruners in the annual battle against blight. Inarching has proved successful in maintaining many fine old pear trees of half a century or more in production.

An experimental helicopter-type wind machine for frost control has been installed by Calvin Lambert, citrus grower, near Santa Ana, Calif.

Ralph Sundquist, Yakima, Wash., fruit shipper and grower, has completed a two-year term as agricultural representative for the Federal Reserve Bank in Seattle.

Cows and orchard is a good combination for A. M. Standish, Milpitas, Calif. His milking barn is equipped with underfloor drainage and cistern to save every drop of liquid manure which is pumped into a tank truck and distributed to young pear trees.

E. J. Newcomer, entomologist for the USDA at Yakima, Wash., is back at his office after a four-week trip to the Atlantic Seaboard.

Frank King, who developed the "J-K" line of air power pruners, saws, knockers, and shakers, lost his grandfather recently at the age of 114. The elder King, a pioneer California farmer, had the pleasure of seeing his son, grandson, and great grandson follow in his footsteps.

Yakima Valley Fieldmen's Association of Washington held its first 1953 meeting in January. Wallace Van Amburg is president and W. A. Luce secretary.

Bishop Ranch at San Ramon, Calif., will machine-harvest walnuts from 400 acres in 1953 using a Ramacher pick-up harvester.

F. M. Shay, president of California Prune and Apricot Growers Association, San Jose, points out that Europeans are much more fruit-conscious than we are. He calls for action by a united fruit industry to tell consumers about the dietary qualities of fruit.

Entomologists of Washington State College recommend poison baits to control strawberry root weevils. Although new insecticides such as BHC, DDT, aldrin, or chlordane show promise, tests on their application are not conclusive as yet.

Chelan County (Washington) agent Richard Bartram and Washington State College farm management specialist Arthur Cagle have prepared an orchard record book which will help Washington growers make out this year's income tax. A limited supply is available at county extension offices.

Selling Thompson Seedless grapes in cellophane bags along with bulk displays increased sales 17 per cent in tests conducted by the USDA in Kansas City, Mo. Logical action would be for retailers to pre-package their grapes to increase their profits.

Dwinnell Bros. Orchards at Chelan, Wash., number each of their trees on 250 acres and keep a yearly record of production by tree.

HANDY ANDY



A. N. Standish, pear orchardist and dairy farmer near San Jose, Calif., converted an army jeep to take care of three jobs which include fork-lifting boxed pears, gathering and piling orchard prunings, and handling manure or other materials by front-lift and dump scoop. About once a week the truck is backed up to the edge of the dairy barn, the hose from the vat pump dropped into the truck tank, and the electric motor is started to pump a tank load of the liquid fertilizer out of the vat under the barn into the truck. The driver moves down the pear orchard after swinging the distributing pipe out from the side of the truck to permit pouring the tank's contents onto the ground at the base of each tree.—F. Hal Higgins.

Grand sweepstakes award winner at the Washington State Apple Show, revived for the first time since 1918 at the annual state horticultural association meeting, was Fred Beisner of Yakima for his tray of Golden Delicious.

Wenoka Growers, Pateros, Wash., are happy they were covered by ample fire insurance as their storage shed with 21,000 new apple boxes caught fire and burned completely.

Hydrocooling apples (immersing in ice water) immediately after harvest removes field heat 150 times faster than conventional air cooling and will give up to six weeks longer storage life. Cost is from four to five cents per box.

In 1940 there were 10.5 million children under five. In 1950 the total was 16.3 million. An all-time birth record of 3,876,000 new consumers was set in 1947. Fruit leaders are pondering ways of establishing in children the habit of eating fruits rather than candies or pops.

Photoelectric sorting of fruits is coming closer to realization. Dr. Roy Smith of the University of California reports that a photoelectric fruit sorter was tried last year and proved satisfactory. Fly in the ointment was the rental fee—\$2,500 a season.

Al Roth, Jr., Yakima, Wash., reports the first successful bottling of pure apple juice in pop bottles for the soft drink market. Each bottle contains the juice of three varieties of apples—Delicious, Winesap, and Jonathan—preserved by pasteurization.

Florida Citrus Mutual will borrow \$2 million to help finance the purchase of 15,000 automatic dispensers of citrus juices. It is interesting to note that there were 507,000 automatic bottle vending machines for pops and colas in operation in 1951.

Paul Lancaster, Yakima, Wash., shipper, is credited with the "Apple for the Teacher" idea which increased apple sales 15 per cent in Cincinnati the week before Thanksgiving.

Charles Rowe, Naches, Wash., was elected to a three-year term on the board of the Washington State Fruit Commission. He takes the place of Charles Morrison, Zillah, whose fine work led to the formation of the commission.

A mechanical cranberry picker manufactured at Nahcotta, Wash., harvested 31 tons of cranberries in 62 days last season.

The transportation of fruits received a thorough scrutiny at a three-day perishables transportation conference held early in February at Davis, Calif. Growers, shippers, railroads, receivers, and USDA and University of California specialists studied transportation problems from A to Z.

The direct cost of farm accidents in California last year was about \$10 million.

WESTERN EDITION AMERICAN FRUIT GROWER

Spray Increases Size of Oregon Berries

LARGER strawberries through use of a liquid chemical spray appear likely as the result of tests recently completed at Oregon State College. Following treatment of Marshall strawberries growth was increased by as much as one-third over that of untreated fruit. The spray was applied about two weeks after bloom. The larger fruit retained full flavor, texture, and sugar content.

Preliminary tests with beta-naphthoxyacetic acid used for the first time on strawberries were termed "highly satisfactory" by Quentin Zielinski, horticulturist, and Ralph Garren, research assistant, who conducted the tests on irrigated plots at the OSC experimental farm. They believe their findings warrant use of the spray in field tests by strawberry growers next summer.

Larger Fruit at Low Cost

Zielinski stated that larger fruit could be grown at low cost if results of next summer's field tests bring about production of the spray in commercial quantities. Spray mixtures using the same chemical are produced commercially for increasing the size of Hawaiian pineapples.

Correct mixture and application of the spray were of major importance in the OSC experiments. The treated berries showed no off-flavor effects, either fresh or frozen, retained full sugar content, and were firm textured with no increased "seediness."

Both the fruit and plants were better colored than unsprayed plants in the same plot, Zielinski reported. After two years of testing, the plants showed no wilting or burning such as results in the use of some growth-regulating chemicals.

Findings in the OSC experiments were further checked at Michigan State College under different soil and climatic conditions, with similar results.

Strawberry growers who wish to make field trials next year should contact the horticulture department at Oregon State College, Corvallis, for recommended application and sources of supplies.—R. H. Birdsall

Read the advertisements and remember advertisers will be glad to send you catalogs, specifications, and prices. Be sure to say you saw it in your Western Edition of AMERICAN FRUIT GROWER.

FEBRUARY, 1953

irrigate effectively



Farmland Portable SPRINKLER IRRIGATION

Put your water resources to more effective use with FARMLAND portable sprinkler irrigation equipment developed by leading irrigation specialists and field-proven on over 275,000 productive acres.

Lightweight FARMLAND quick couplers and other sprinkler irrigation fittings of improved design, control and conserve irrigation water with a minimum of labor and maintenance expense. Costly land leveling and ditching are eliminated. Water is uniformly distributed to crops where you want it...as you want it. Let FARMLAND sprinkler irrigation experts help you produce larger and better crops.

Only Farmland Irrigation Company, Inc., manufactures a complete line of Hand-Move and Mechanized sprinkler irrigation equipment to meet every crop requirement. And FARMLAND dealers have qualified irrigation experts who will come to your ranch or farm to design the right sprinkler system for you without cost or obligation.

TAKE ADVANTAGE OF OUR FREE SPRINKLER IRRIGATION PLANNING SERVICE

Write for new literature and name of the FARMLAND sprinkler irrigation dealer in your area



Farmland IRRIGATION COMPANY, Inc.

P.O. BOX 1133 • FRESNO, CALIFORNIA

Manufacturers of FARMLAND, STOUT and WYSS
Sprinkler Irrigation Equipment

SUCCESS IN WESTERN ORCHARDING

By JESSE CHILDS

A vista of 45 years of experience in fruit growing in the famous Yakima Valley of Washington gives Grower Childs cause to reflect on the tremendous development in spray materials and spraying technique which has taken place.—Ed.



JULIUS CAESAR, referring to the conquest of Gaul, said, "All of which I have seen and most of which I have been." Without undue exaggeration I might say something like that about my experience in the development of spraying, though it would be worse than exaggeration to say that the conquest of the bugs and diseases has been accomplished.

I began raising fruit in 1908 and have seen most of the development of spraying, both in methods of application and in materials. I might do as one of these sharps do and draw a graph to illustrate development. Zero would be no spraying at all. Then the line would rise gradually until a few years ago when it would shoot up like the national debt. I would come in not far above zero.

Let's start at the beginning.

When it seemed that my little trees needed a lime sulfur spray, we borrowed a barrel sprayer. One pumped and the other held the little rod. It wet the trees, but this could have been accomplished about as fast by sopping the spray on with a rag.

The first power sprayer was a great development—a 200-gallon tank, a two cylinder pump, and a one-lung engine named Novo. We called it Nogo, though it did run

quite a bit with much cranking. Spray was applied by bamboo rods surmounted by nozzles of the vermorel type, spray being thrown against a little plane of metal at an angle of 45°. This produced a flat spray about two feet wide having a penetration of about three feet.

Well, the trees were small, the pests not so rugged, and we got by. Other and more powerful portable sprayers came in time. The spray gun was a great invention.

The next development was really a great one—the stationary system. It was supposed to be the neplus ultra like R. E. Olds' "Reo the Last" in 1913, which he declared embodied all possible improvements in autos. Some large installations had main lines a half mile long which introduced problems of the settling of material and the unequal division of spray material in competing sidelines.

However, the system was good until suddenly made obsolete by the introduction of the "speed-sprayer" type. Now we have machines of all makes and various types spreading lethal doses on the wings of water, air, or steam. Now I see one of these monsters crawling (that word "speed" is a misnomer) through my orchard doing the work of many men while overhead an airplane or helicopter circles about dusting a neighbor's orchard. A far cry from that barrel sprayer!

THE DEVELOPMENT in materials has been no less surprising. In the early days there were two sprays—lime sulfur for scale and arsenate of lead for codling worms. In those days Professor Melander of the State College of Washington insisted that one spray—the calyx—was enough to control worms, and a half pound to 100

gallons sufficient. All worms were expected to enter the calyx, get their dose, and die.

This program didn't work out as too many worms very dishonestly entered on the side. But this illustrates the fact that control was much easier then than later.

As time went on, worms seemed to develop a resistance and multiplied greatly. Many orchards in the warmer part of the Yakima Valley were abandoned because of worm infestation. To meet this growing difficulty the use of oil was introduced and many sprays were applied. The "dynamite" spray, the "inverted" mixture, was developed.

We were supposed to encrust each apple with a mixture of lead and oil impenetrable to the worm. We were supposed to make a chemical analysis of the apple to see if there were enough micrograms of lead to the unit of area. Then at packing time we had to half cook the apples first in hot alkali to remove the oil and then in hot acid to remove the arsenic. In spite of this worms became harder to control. In the height of the season we were supposed to spray every 10 days.

ALL THIS is past history. The curve of our imagined graph would rise very slowly. Cryolite was used instead of arsenate because it was realized that the orchard soil was becoming heavily poisoned by the vast quantities of arsenate of lead. Now we come to the present. Suddenly there was a development that might be called explosive in intensity; the introduction of the organic sprays. This has ushered in confusion, not hopeless, hopeful rather, but still confusion.

DDT is the wonder spray for
(Continued on page 32-G)

BLOWERS REDUCE SPRAY COSTS

28 per cent savings are revealed in California study

THE conventional high pressure spray rig can be converted with a blower attachment to get rid of the man with the spray gun.

This conversion is quite popular in some fruit growing sections of California. The economics of this popularity were emphasized in a cost study made by Extension Farm Management Specialist Burt Burlingame, University of California, and Farm Advisor Verner Carlson of Merced County.

They compared the spraying costs per acre of the high pressure hand gun equipment and the same equipment after the blower had been added. There was a wide range in costs for most items. A summary of averages for over-all costs is as follows:

COMPARATIVE SPRAYING COSTS PER ACRE USING HAND GUN AND BLOWER

	Average
Total cost per acre with hand spray gun	\$3.41
Total cost per acre after addition of blower	2.44
Difference in costs	.97
Cost per 100 gal. applied with spray gun	1.54
Cost per 100 gal. applied with blower	1.35
Difference in cost per 100 gal. between gun and blower	.19

Some of the factors which affect spraying costs and account for differences between operators are: size of trees, kind of fruit, rate of application, size of rig tank and pump, and distance to water and filling facilities. The number of acres on which the equipment is used is an important factor influencing overhead costs of depreciation and interest.

All of the growers in the study used two or more men in the spraying operation before the addition of the blower.

Savings in Material

All operators in the study used the same concentrations in their sprays with the blowers as with the spray guns. Therefore, it can be assumed that savings in material costs by the addition of a blower would be in direct proportion to the reduced rate of application. All but one operator had a lower rate of application after the addition of the blower. The average of all records showed 20 per cent less gallons applied per acre with the blower.

The general conclusions of the study were summarized as follows:

Growers have reduced spraying costs by the addition of blower attachments.

This reduction is primarily the result of decreasing the quantity of spray applied per acre.

Cost per 100 gallons of spray applied was decreased by some and increased by others. The average for all records showed 12 per cent lower cost with the blower.

Spraying time, or rig hours per acre, on the average was 31 per cent less after the addition of the blower.

The quantity of spray that was applied averaged 20 per cent less with the blower.

THE END

WESTERN ORCHARDING

(Continued from page 32-F)

the control of the codling worm, though the grower that becomes careless and overconfident soon finds that the worms can come back with a rush. But DDT complicates the matter by killing the predators which formerly controlled other bugs. So now we have a growing host of new organic materials, some effective against one pest or disease but not against any other. New uses, too, for spraying—spray to thin, spray to stick 'em on, spray to keep cherries from cracking. Yes, confusion!

Then the spray companies introduce an unnecessary confusion in names. Each company must find a distinctive name for each product. When I want parathion I'm supposed to ask for Niatoxphoskil. If I want parathion from some other company I'm supposed to remember some other fool name. There ought to be a law.

So now I leave the matter in hopeful confusion. Who can tell what will be the outcome?

One bit of advice. In this confusion the grower had better lean heavily on the advice of some competent expert.

Well, Julius Caesar and I saw it all, and these are my commentaries.

THE END

LUNG and EYE protection FOR GROWERS



RESPIRATORS

AGRISOL

Parathion, Aldrin, Toxaphene, etc.

Agri-Tepp

tepp, help

Comfortable, efficient protection for field and aerial application of insecticides.

U.S.D.A. tested

No. 25 DUST RESPIRATOR—a filter respirator for protection against non-toxic dusts.

Gas Masks

Lightweight, easy-to-wear full-face protection for heavy concentrations of insecticides. Types for all hazards. State material being used.



MonoGoggle®

Lightweight, all plastic eye protection for sprays, dusts and impact hazards in field and farm shop.



Don't take chances—keep on the safe side—use agricultural protective equipment by Willson. Write for literature and colorful agricultural safety poster.

WILLSON

WILLSON PRODUCTS, INC.

Established 1870

117 Thorn St., Reading, Pa.

WRITE FOR FREE COLOR ILLUSTRATED CATALOGUE

Containing 32 Pages Describing
and Pricing Hundreds of Plants.



Growers of
FRUIT TREES
NUT TREES
GRAPES
BERRIES
SHADE TREES
ORNAMENTALS
DECIDUOUS SHRUBS
EVERGREENS
VINES
ROSES
PEONIES
—
SEED
FERTILIZER
GARDEN SPRAYS
Etc.
—
EVERYTHING
for the
PLANTER

Member
Washington State Nurserymen's
Association
American Association of
Nurserymen



NURSERY COMPANY

Wenatchee, Wash.

(The Wenatchee Nurseries)

400 Acres

Established 1906

SPRING 1953

- 33 Varieties of Apples
- 10 Varieties of Pears
- 11 Varieties of Apricots
- 12 Varieties of Cherries
- 22 Varieties of Peaches
- 6 Varieties of Prunes
- 14 Varieties of Plums
- 26 Varieties of Dwarf fruit trees
- 3 Varieties of Nectarines
- 2 Varieties of Quince
- 10 Varieties of Nut trees
- 19 Varieties of Grapes
- 16 Varieties of Berries
- 30 Varieties of Evergreens
- 42 Varieties of Shade and Ornamental trees
- 48 Varieties of Flowering Shrubs
- 5 Varieties of Hedges
- 8 Varieties of Vines
- 15 Varieties of Peonies
- 62 Varieties of Roses

Many in Gorgeous Color

Ask about our Free Tailor-Made Landscape plan for your home. Have your own individual blueprint. Let our Landscape Department help you select proper plants. Trees and shrubs grow in value as well as beauty after planting.

We specialize in the production of hardy, northern grown, better varieties of fruit trees. Many of our varieties which we have introduced have been granted plant patents by the U. S. Government, and are paying profits to orchardists everywhere from Maine to California.

Columbia & Kanogan

NURSERY COMPANY

THE WENATCHEE NURSERIES

WENATCHEE, WASHINGTON

From Coast to Coast it's "C & O"—Plant 'em—watch 'em grow.

WASHINGTON FRUIT LETTER

- Now It's the Citrus Growers!
- Which Group will be Challenged Next by FTC?

By LARSTON D. FARRAR
Washington Correspondent,
American Fruit Grower

THE Federal Trade Commission has completed the first phase of its battle against an alleged combination among Appalachian apple growers, and, even before winning that case, has turned its big guns loose on the orange growers of Florida, 85 per cent of whom do their marketing through the Florida Citrus Mutual of Lakeland.

In the now-famous apple price-fixing case, the FTC heard witnesses called by Uncle Sam in Washington, in Martinsburg, W. Va., and in Charlottesville, Va., before adjourning the hearings to give attorneys for the apple growers and processors until February 17 to file briefs supporting a motion to dismiss the case.

Their request for dismissal, based on the contention that the FTC lawyers had failed to present evidence that growers and processors worked together to fix prices on raw apples for processing, will be answered by FTC attorneys, who have until March 11 to present the rebuttal.

If Frank Hier, the FTC examiner who is hearing the case, rules in favor of the growers and processors, the FTC attorneys may appeal to the entire Federal Trade Commission itself. On the other hand, if Mr. Hier denies the motion of the attorneys for the apple growers and processors, the accused group then will be given the opportunity to present rebuttal hearings, at which witnesses friendly to them may be called.

If, after the growers and processors have completed their case, the trial examiner then rules against them, the accused group still may appeal to the entire Federal Trade Commission itself.

In other words, it looks like some more weeks will elapse before anyone knows for certain just what will come of the FTC case against the Appalachian growers and processors.

MEANTIME, FTC's complaint against the orange growers is that they are operating in restraint of trade by belonging to, and supporting,

(Continued on page 35)

FEBRUARY, 1953



THE WORLD OVER

MULTIPLY YOUR STORAGE SPACE BY USING CLARK EQUIPMENT

This is the modern method by which alert business men throughout the world are satisfying the need for increased storage space without investing a penny in building costs: the Clark method of materials handling.

Clark fork-lift trucks enable you to utilize your "air rights"—by putting idle space near the ceilings to profitable use. They promote orderly efficient warehouse planning—every commodity in its assigned place. Materials move into and out of storage a great deal faster—making it easy to handle a far larger volume of goods. Acci-

dents and damage losses are sharply reduced. Using unit loads composed of multiple items save much time in taking inventory. Actually, storage capacity is usually doubled, in many instances tripled, by carefully planned use of these powerful, fast, safe, efficient machines.

For full information on this more efficient modern method, consult the Clark dealer in your area. You'll find him a competent counselor on all problems of handling materials at lowest cost. Call him today—he's listed under "Trucks—Industrial" in the yellow pages of your phone book.

CLARK ELECTRIC AND GAS POWERED FORK TRUCKS AND POWERED HAND TRUCKS • INDUSTRIAL TOWING TRACTORS



INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK 142, MICHIGAN
Please send: ☐ Movie Digest ☐ Safety Saves
☐ New Condensed Catalog ☐ Material Handling News

Name _____

Firm Name _____

Street _____

City _____

Zone _____

State _____

AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

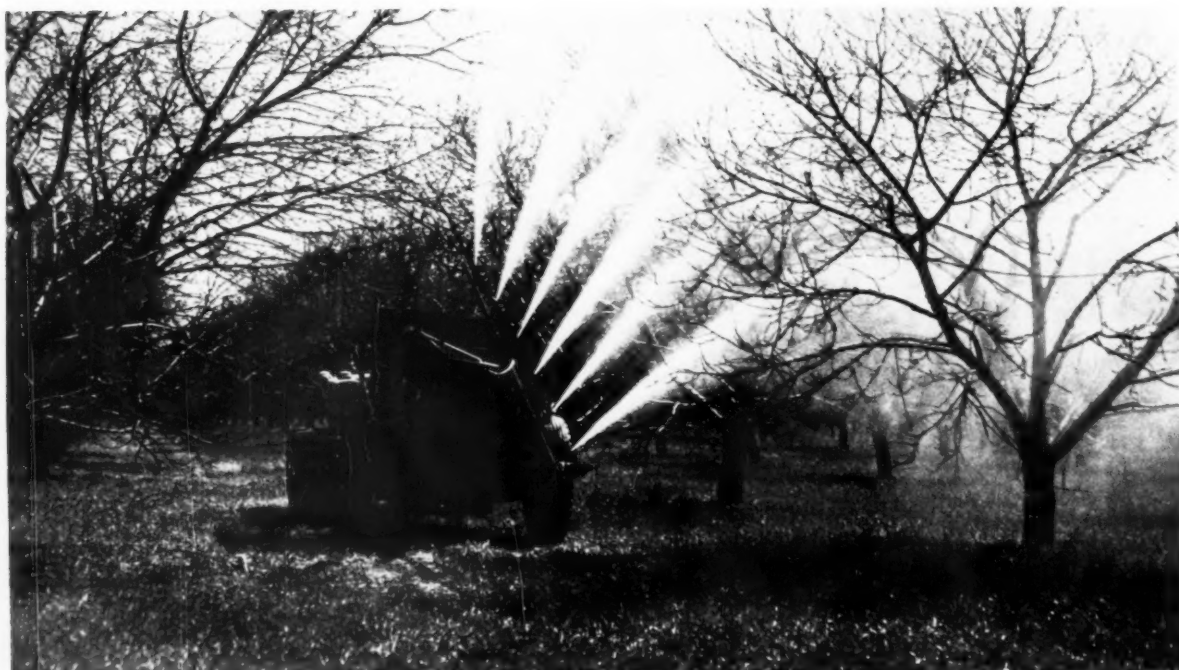
1903
1953

FIRST FIFTY YEARS
**CLARK
EQUIPMENT**



FIRST STEP ON YOUR FRUIT PROTECTION SCHEDULE

DN-289, Dow's peak performance dormant spray,
stops insect damage before it starts



Right now is the time to get ready for another year of quantity and quality fruit production. Spraying your trees with *DN-289*[®]—a liquid non-oil preparation successfully used for dormant spraying since 1942—controls a variety of overwintering insects such as rosy apple aphid, grain aphid, early summer green aphid, black cherry aphid, mealy plum aphid, eye-spotted bud moth, cherry base borer, pecan nut case borer, pear psylla, scale insects, twig borer and red mite eggs.

DN-289 is recommended for spring dormant use

on apples, pears, cherries, plums, currants, pecans—but *not* on peaches. It is completely water-soluble—easy to mix and use. Always consult the label on the container for complete directions and precautions for handling this effective dinitro material.

To get a head start on the spraying that will bring bigger profits at harvest—get *DN-289* from your supplier and put it to work NOW. THE DOW CHEMICAL COMPANY, *Agricultural Chemical Department*, Midland, Michigan.

you can depend on DOW AGRICULTURAL CHEMICALS



WASHINGTON LETTER

(Continued from page 33)

the activities of the Florida Citrus Mutual. Some 7,000 grower-members belong to this organization, and they supply about one-half of all oranges, lemons, and limes that Americans eat.

Specifically, the FTC complaint states that the non-profit marketing group operates under a plan by which it "does not handle, buy or sell citrus fruits or citrus products, but instead attempts to control the purchase and sale of citrus fruits and citrus products and regulates the prices at which these products are purchased and sold through contract arrangements with growers and with handlers."

It also is alleged that the association seeks to control prices and marketing of citrus products after title has passed from the growers.

Perry W. Murray, president of the citrus group, said in Frostproof, Fla., that "We feel we have been complying with the law and have never stepped over the bounds of trying to control prices after fruit has passed out of the hands of the grower."

"The Government has been attempting to stabilize some agricultural interests by subsidies," he continued. "Here we have a group of growers trying to stabilize their industry without subsidies and the Government criticizes it."

THE FTC complaint calls for a tentative cease and desist order which, the agency says, would allow the marketing group to operate inside the law.

The Capper-Volstead Act of 1922 authorizes farmers, planters, dairymen, and others to work together for the purpose of "collectively processing, preparing for market, handling, and marketing" their products, and, in effect, makes such arrangements immune to prosecution for violation of the anti-trust laws. In the case of the Florida Citrus Mutual, it does not actually process or market its members' produce, but seeks to help them to do these things for themselves through information.

The association was founded in the latter part of 1948. Robert W. Rutledge, its general manager, calls it "the first successful effort by the Florida grower to form an organization to help himself," and he says that its main function is to keep "the grower informed of the true economic value of his crops."

The association will fight the FTC's charges all the way, just as have the members of Appalachian Apple Service, Inc., and processors of the Appalachian area. Formal hearings on the "orange" case will begin February 18 in Lakeland. **THE END**

FEBRUARY, 1953

Measures Up to Fullest Expectations

Says Mr. H. Grant Gardner

CARDOX AQUA-JET SPRAYER

MODEL 54Y



H. GRANT GARDNER
Fruitland, Idaho

Hurst Industries, Inc.
San Jose, California

Gentlemen:

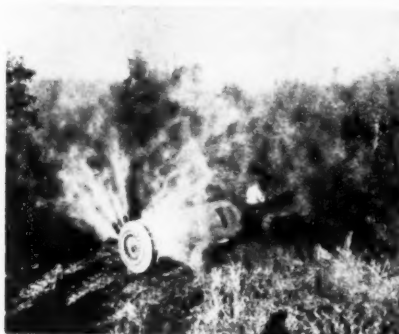
Last spring I and another grower of limited acreage, purchased one of your Cardox Orchard Power Sprayers. Our complete program of dormant, thinning spray and summer pest control, together with recent application of hormone stop drop, has been accomplished with a maximum of efficiency and a minimum of effort.

The performance of your machine compares most favorably with all types of competition and your prompt service and advice have been very gratifying.

Anyone contemplating an air displacement fog-type sprayer should, in my estimation, thoroughly investigate Hurst Industries' Aqua-Jet Orchard Sprayer. It will measure up to their fullest expectations.

Yours very truly,

H. Grant Gardner
H. Grant Gardner



One man on the tractor does the work of a whole crew!

● Time after time, owners are kind enough to tell us of the great performance of their CARDOX Aqua-Jet Sprayers. This performance results from the exclusive Aqua-Jet principle of high-velocity air blast, high pressure pump and impinging jets—the most efficient combination yet devised for thorough coverage of the most trees per hour. See your Aqua-Jet dealer now for full facts on today's most remarkable sprayer.

HURST INDUSTRIES, INC.
SAN JOSE, CALIFORNIA
SUBSIDIARY OF CARDOX CORPORATION

KEEP SCAB OUT WITH DU PONT "FERMATE"

Ferbam-Fungicide



TOUGH ON DISEASE. "Fermate" fungicide gives foliage and fruit of apples and pears sure protection against scab. It also controls cedar-apple rust, black rot, sooty blotch and bitter rot.

EASY ON BLOSSOMS, LEAVES AND FRUIT. "Fermate" is safe to use through the scab season, provides disease control without burning or stunting even tender young growth. Safe in hot weather, too.

BETTER YIELD AND QUALITY. Leaf growth reaches full vigor when protected with "Fermate." Helps make higher yields of larger fruit with better finish.

COMPATIBLE WITH OTHER CHEMICALS. You can use "Fermate" safely with most pest-control products. For exceptional wetting and covering power, use Du Pont Spreader Sticker in the spray mixture.

IDEAL FOR MANY FRUITS. "Fermate" also controls grape black rot, brown rot of stone fruits, peach scab, cherry leaf spot, cranberry fruit rots and raspberry anthracnose and leaf spot.

See your dealer now for Du Pont "Fermate" fungicide and other proved Du Pont pest-control products. Ask him for free booklets, or write to Du Pont, Grasselli Chemicals Department, Wilmington, Delaware.

DU PONT CHEMICALS FOR THE FARM INCLUDE:

Fungicides: PARZATE* (Liquid and Dry), FERMATE,* ZERLATE,* Copper-A (Fixed Copper), SULFORON* and SULFORON*-X Wettable Sulfurs... Insecticides: DEENATE* DDT, MARLATE* Methoxychlor, LEXONE* Benzene Hexachloride, KRENITE* Dinitro Spray, EPN 300 Insecticide, Calcium Arsenate, Lead Arsenate... Weed and Brush Killers: AMMATE,* 2,4-D, TCA and 2,4,5-T... Also: Du Pont Cotton Dusts, Du Pont Spreader Sticker, FARMONE* Fruit Drop Inhibitor, and many others.

*REG. U. S. PAT. OFF.

On all chemicals always follow directions for application. Where warning or caution statements on use of the product are given, read them carefully.



REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

The QUESTION BOX

How often should I change spray nozzle disks?—*Virginia*

It depends upon the spray materials being used. When using materials that are in suspension there is more rapid wearing. Worn disks increase rate of discharge, angle of spray widens and reduces drive of spray. Disks should be turned or replaced when the sharp inside of the hole becomes rounded.

We have a good-sized cinder block warehouse which we built after our barn burned down. We are considering making a substantial addition for cold storage. We inquired about asphalt floors for a cold storage and were told that they would not be entirely satisfactory because the asphalt would not completely harden indoors and wheeled vehicles would make marks in it. I read in the November issue of *AMERICAN FRUIT GROWER* that a grower had had good results with an asphalt floor. Can you tell me whether there is an asphalt that will produce a hard enough floor?—*New York*

Floors made of asphalt are quite common and are used in many industrial plants. Such floors can be made sufficiently hard for almost any kind of traffic, and a three-inch asphaltic concrete mix on a well-stabilized base such as macadam stone or concrete is recommended. The binder course is laid to a depth of approximately one and one-half inches and the wearing course an additional one and one-half inches. There are undoubtedly some contractors in your vicinity who manufacture these mixes and can do this work. It is, of course, important to secure a well-stabilized base, properly drained and free from moisture. A good grade of gravel or macadam would be cheaper than the concrete base. There will be no difficulty as far as the smoothness of this surface is concerned, and it will be free from cracks and joints.

Should I prune my raspberry plants in early winter before the severe winds and ice break the canes? How high above the ground should they be pruned?—*Indiana*

If you prune too early, the canes are likely to be brittle and thus break easily. And, when the canes are cut back to the proper lengths, subsequent winterkilling or drying out of the end portions may unduly reduce the amount of fruit wood left. The amount of pruning necessary varies with the type, variety, vigor, and other growth conditions. It is usually best to head back the dormant canes as lightly as is compatible with suitable training, freedom from damage in cultivation, ease of harvesting, and avoidance of small berries near the ends of the canes.

Is the Lowland Raspberry a good dessert apple? Would Jonathan serve as a suitable pollinator?—*Illinois*

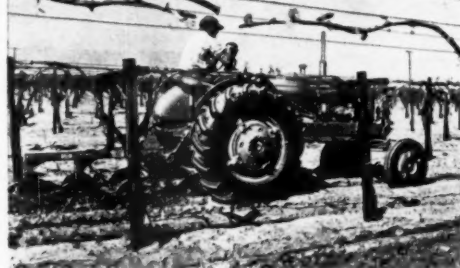
Though the Lowland Raspberry, which is an early-ripening Russian variety, has a good, mild-acid flavor, it is seldom planted commercially since the fruit is very tender. J. C. McDaniel of the University of Illinois writes that it can be pollinated by Jonathan.

FEBRUARY, 1953

MAKE HEAVY WORK SEVEN WAYS LIGHTER



On power take-off sprayers, thorough tree coverage is facilitated by the WD Tractor's Two-Clutch control. Continuous spray while stopped or on the move.



◀ Vineyard plowing comes easy to the WD's 3-bottom, free-swing plow. Trails where desired, no damage to vines.

You can step up the pace and cut the cost of heavy operations in the orchard, grove or nursery. Why? Because engine power in the Allis-Chalmers WD is harnessed in seven work-saving ways . . . more than in any other farm tractor.

Engine power does it all:

1. Spaces drive wheels. 2. Boosts traction automatically. 3. Lifts and controls mounted implements. 4. Powers sprayers and other pto. machines stop-or-go with Two-Clutch Control. 5. Controls pulled implements hydraulically. 6. Drives belt-powered machines. 7. Gives you 3-plow pull, with 35.80 engine horsepower.

You'll get on the job faster, be done earlier, keep critical time schedules up to the minute.

There may be a surprising number of additional jobs you can put under this kind of power. Consult your Allis-Chalmers dealer.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

For level plowing, or turning all furrow slices uphill, there's no equal to the WD's two-way spinner plow. Close-coupled; quickly attached; full hydraulic control.



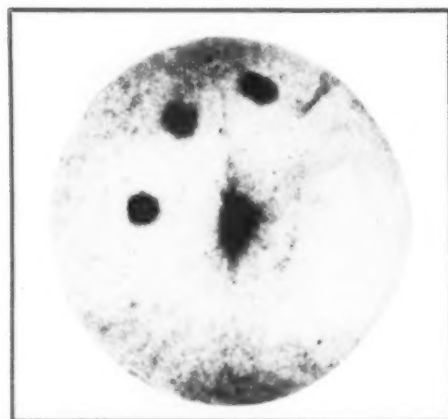
How To Control Curculio

IN YOUR APPLE ORCHARD



Arsenate of Lead prevents this damage caused by first-brood curculio.

Photos courtesy of the Virginia Agricultural Experiment Station



Arsenate of Lead applied against first-brood curculio prevents this "pepper-box" damage caused by second-brood curculio in midsummer.

During the past three years, curculio has caused serious damage to apple crops in all states *east of the Rockies*.

Careful investigations have shown that a reduction in the use of Arsenate of Lead as a spray for curculio and the substitution of certain synthetic organic insecticides has been largely responsible for this condition.

Arsenate of Lead has controlled curculio effectively in apple orchards for many years and has not lost any of its effectiveness in the control of curculio. There is no evidence to show that the curculio have developed a resistance to Arsenate of Lead.

Arsenate of Lead is Proved

Synthetic organic insecticides used as sprays against curculio are short-lived, whereas Arsenate of Lead retains its effectiveness as long as it remains on fruit or foliage.

Just how does curculio damage apple crops? Curculio are snout beetles that emerge from hibernation at apple-blossom time or earlier, and feed on buds, petals, newly forming apples, and newly set fruit.

Since curculio feed before they lay eggs in the newly formed apples, it is logical that the parts of apple trees on which they feed should be protected by a heavy and well-distributed coating of a suitable insecticide.

Prevents Egg Laying

Arsenate of Lead is the insecticide you should use to control first-brood curculio. By poisoning the feeding curculio beetles, egg laying is prevented and your apple crop will be free from second-brood damage.

In spraying your apple orchard in 1953 against curculio, use Sherwin-Williams Arsenate of Lead in the pink, petal-fall or calyx, first and second cover applications.

In every application of Arsenate of Lead, we recommend the addition of S-W SAFE-N-LEAD*, a neutral zinc compound that prevents arsenical injury. We also recommend that you add S-W SPRED-RITE* to each of these applications. SPRED-RITE* produces a heavy, well-distributed coating of Arsenate of Lead on both fruit and foliage.

Depend on Sherwin-Williams Arsenate of Lead to prevent curculio damage to your apple crop in 1953.

You can obtain your spray material requirements from the Sherwin-Williams Insecticide Dealer in your locality, or write to one of the addresses below:

THE SHERWIN-WILLIAMS CO.

INSECTICIDE-FUNGICIDE DIVISION

100 Park Avenue
New York 17, N. Y.

101 Prospect Ave., N. W.
Cleveland 1, Ohio

300 W. Lake Street
Chicago 6, Illinois

1450 Sherwin Avenue
Oakland 8, California



* U. S. Registered Trade Marks

DISEASE CONTROL

(Continued from page 17)

Experiments in New York State during 1951 and 1952 indicate that strong Bordeaux mixture (10-10-100) applied in the fall gave much more effective control of peach leaf curl than lime-sulfur (6 quarts to 100).

Dithiocarbamates — Ferbam continues to be the outstanding material for the control of cedar-apple and quince rusts. It has also been widely used alone or combined with sulfur in the summer sprays. There is some evidence that fruit sprayed with ferbam develops prominent lenticels. The effect is especially pronounced on light-colored fruit. In 1952 scab control with sulfur-ferbam mixtures was not entirely satisfactory in some areas. This coupled with the effect of ferbam on fruit finish has started a trend to other organic materials in summer sprays for apple disease control.

Zinc ethylene bisdithiocarbamate (zineb) which has been used in Colorado for pear blight control, in 1952 gave indication of being effective against this disease along the Atlantic seaboard. In addition it gave excellent control of the frog-eye leaf spot phase of apple black rot.

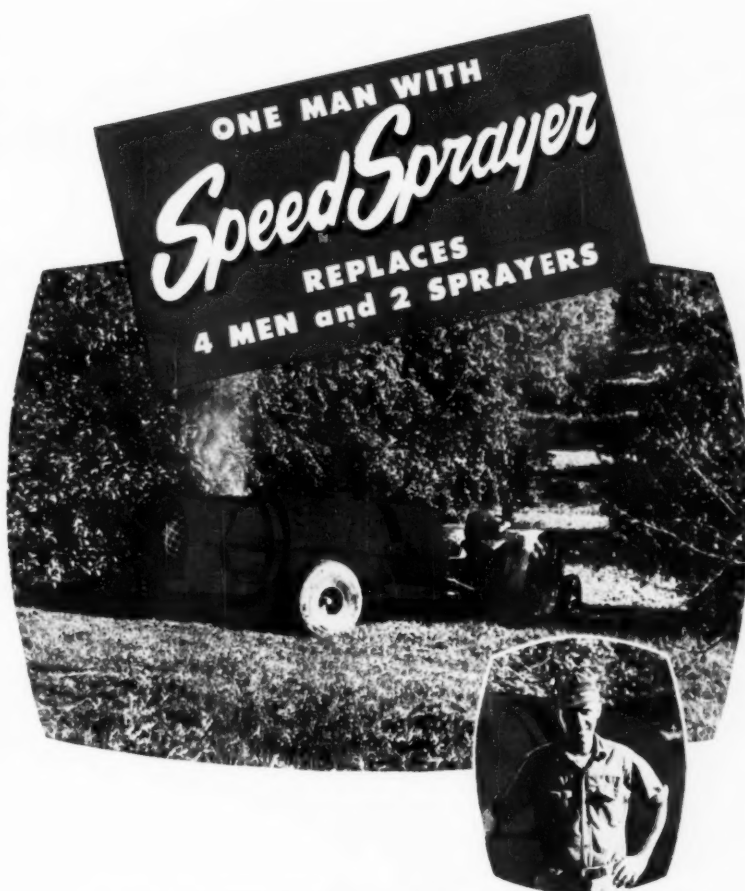
Manganese ethylene bisdithiocarbamate, still another compound of the dithiocarbamate group, likewise reduced the number of blighted twigs in a pear blight experiment but not to the extent achieved with the zinc salt. The manganese compound, however, quite effectively controlled the apple scab and cedar-apple rust fungi in one series of experiments in 1952.

Phenyl Mercury Compounds — The organic mercury compounds are excellent eradivative materials but have little or no residual effect. The prolonged scab infection periods of the spring of 1952 demonstrated this conclusively. It was impossible to spray enough to keep trees protected by using only eradivative materials.

Spray mixtures of phenyl mercury compounds with ferbam, sulfur, captan, glyoxalidines or Phygon, on the other hand, gave satisfactory control. These mixtures combine the eradivative action of the phenyl mercury compounds with the protective action of materials having a definite residual effect. The experience gained in 1952 will further accelerate the trend toward the use of phenyl mercury materials combined with protective fungicides. Such combinations appear to be among the most effective agents to use for control of the scab fungus at the very beginning of the season.

Captan (N-trichloromethylthio tetrahydrophthalimide) — A material,

(Continued on page 40)

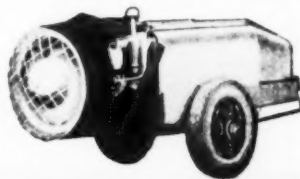


Despite big trees and hilly, rolling terrain of the Huff Orchards near Romeo, Michigan, Charles Huff, son of the owner, sprays 160 acres (110 in large mature apple trees) in 3 days with a John Bean Speed Sprayer. The job formerly took 4 men with 2 sprayers 4 days.

Owner, Walter K. Huff has also found he is now using less spray material and getting better control — particularly on red-banded leaf rollers.

IT IS PERFORMANCE IN THE FIELD THAT REALLY COUNTS — AND NO SPRAYER HAS EVER OUTPERFORMED THE JOHN BEAN SPEED SPRAYER. SEE YOUR JOHN BEAN DEALER TODAY.

For Low Cost Air Type Spraying — See The JOHN BEAN SPEEDAIRE*



For medium acreages convert your present power sprayer to a modern air type unit with the low-cost John Bean Speedaire. Offers you many of the advantages of the larger Speed Sprayer — one man operation, precise pattern control, handles dilute or concentrate sprays, complete foliage agitation for complete coverage.



JOHN BEAN, Lansing 4, Mich.

Please send me your catalog on:

- ☐ John Bean Speed Sprayer
☐ John Bean Speedaire

Name

Address

City

State



LANSING 4, MICHIGAN
SAN JOSE, CALIFORNIA

Division of Food Machinery
and Chemical Corporation



Yellow Transparent untreated



Yellow Transparent treated
with ACP AMID-THIN

Announcing a new material for apple thinning **ACP AMID-THIN**

Recent field tests with Yellow Transparent, Duchess, Early McIntosh, Wealthy, McIntosh, Cortland, Rhode Island Greening, Baldwin, Rome, Northern Spy and Jonathan have shown that this material does not cause injury to foliage at concentrations necessary for thinning, and therefore results in a leaf-fruit ratio more favorable to fruit bud formation the following year.

This material is applied at petal fall, and therefore thinning fruit at this early stage of development increases the size of the remaining fruit.

Another advantage in using this material is its wide range of safety, from the standpoint of overthinning. In our field tests to date we have not overthinned at high concentrations.

Available for limited use this year. Consult your local agricultural authority.

AMERICAN CHEMICAL PAINT CO., AMBLER, PA. • NILES, CALIF.

AGRICULTURAL CHEMICALS DIVISION

Originators of 2,4-D and 2,4,5-T Weed Killers



DISEASE CONTROL

(Continued from page 39)

sold commercially as Orthocide 406 or simply "406," was given a very extensive test for fruit disease control in 1952. Captan proved to be an efficient yet bland material. It did not injure the very sensitive Golden Delicious variety of apple, and other varieties sprayed with it were highly colored and smooth in finish.

Captan apparently does not control cedar-apple rust, is only partially effective against sooty blotch and has little effect upon Botryosphaeria spot. In South Carolina, captan gave excellent control of peach anthracnose.

Phygon (2,3-dichloro-1,4-naphthoquinone)—This material continues to be an extremely effective fungicide but it frequently causes chlorosis of apple leaves and spotting of peach fruit. Nevertheless, Phygon properly used gives excellent control of the blossom blight stage of peach brown rot fungus and is effective for the control of apple scab and bitter rot.

According to recent studies the fungicidal action of Phygon appears to be more of the eradivative than protective type. There is also some evidence from 1952 experimental work that a mixture of Phygon and ferbam is less injurious than sprays containing only Phygon.

In South Carolina, Phygon, like captan, controlled the peach anthracnose fungus.

Glyoxalidine acetate—The organic fungicide sold under the trade name of Crag 341SC continues to be used as a substitute for Bordeaux mixture for the control of the cherry leaf-spot fungus. In addition a number of tests in 1952 involved combinations of Crag 341SC with phenyl mercury compounds or with Phygon. These combinations gave very good results and are in accord with the trend toward an eradivative-protective combination of fungicides for the control of the apple scab fungus at the beginning of the season.

Antibiotic Materials—The very effective use of antibiotics in treatment of diseases of human beings needs no comment. Research work on their possible effect on organisms causing plant diseases is underway.

Actidione, for example, has been tested for the control of the apple mildew fungus. Unfortunately, when applied as the buds were unfolding it injured the young apple leaves and did not retard the development of the mildew fungus. On the other hand, actidione has been found to be effective in Michigan and New York experiments for the control of the cherry leaf spot fungus.

AMERICAN FRUIT GROWER

Thiolutin, another antibiotic material, gave very interesting results in the control of pear blight in Missouri and Delaware and a reduction in frog-eye leaf spot of apple in one experiment in Delaware in 1952. A tremendous amount of research work must be completed before any of these materials will be ready for commercial use in the control of plant diseases.

Compatibility Problems

Prior to the advent of organic pesticides, the average fruit grower had little trouble with the compatibility of the materials used in spray mixtures. To be sure it was well known that lime had to be used with arsenate of lead and with zinc sulfate, that sulfur could not be used with oil sprays and that oil added to Bordeaux mixture was apt to reduce its efficiency.

It is becoming increasingly apparent that some of the new organic materials pose similar problems. It is known, for example, that ferbam can follow a phenyl mercury compound without causing injury but that a mercury preparation of this type cannot be applied safely to trees recently sprayed with ferbam. Strangely enough ferbam and phenyl mercury compounds can be mixed and applied without causing injury.

In areas where the zinc-lime spray is used for bacterial spot control, the use of parathion for insect control has created a serious problem because of the adverse effect of lime on parathion. A complete solution to this problem has not been reached although some growers use the so-called "neutral" zinc compounds without lime in combination with parathion.

In contrast, the use of arsenate of lead and lime with captan results in less efficient control of the apple scab fungus than when parathion is used with captan. In this case the lime adversely affects the fungicide. Recently the problem has been further complicated by reports from New York, Virginia, and West Virginia that parathion, in turn, adversely affects the fungicidal efficiency of nearly all commonly used fungicides.

It is thought that parathion in some way affects the retention (set) of the fungicide deposited on the leaves and fruit. The fact that the phenyl mercury compounds, which leave no perceptible residue, are the only materials not affected by parathion lends support to this theory. On the other hand the results obtained in Virginia indicate the possibility of a much more complex reaction. It was found there that the addition of activated carbon prevented parathion from reducing the fungicidal efficiency of captan.

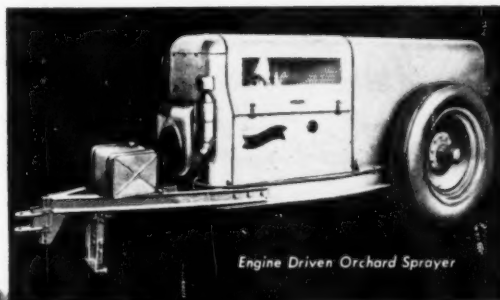
THE END

FEBRUARY, 1953

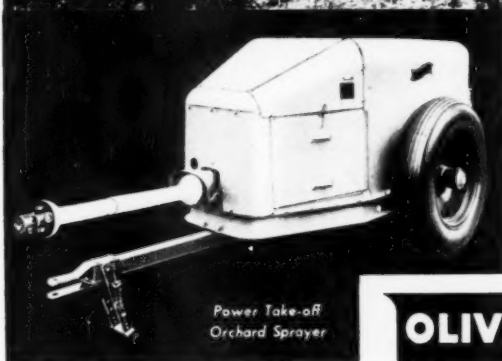
These **IRON AGE** Sprayers are the **best that money can buy!**

(We know because our customers say so)

IRON AGE gives you complete coverage and thorough penetration of all foliage to assure protection against insects and diseases. The equipment is ruggedly built to last a long, long time with a minimum of maintenance. The dependable pump gives faithful service season after season without trouble.



Engine Driven Orchard Sprayer



Power Take-off Orchard Sprayer

▲ **IRON AGE MIST SPRAYER** gives volume and velocity of mist necessary for complete coverage. Light weight permits early spraying on soft ground... maneuverability allows close quarter work. Double axial blowers spray from either side.

IRON AGE SPRAYERS are built in many different sizes and types—both power take-off and engine driven—with a wide assortment of brooms, guns and nozzles to meet every orchard and grove spraying requirement. See your Oliver Iron Age Dealer now.



MAIL TODAY FOR FREE INFORMATION

THE OLIVER CORPORATION, Dept. 25, 400 W. Madison St., Chicago 6, Illinois

- ☐ Please send me information on IRON AGE High Pressure Sprayer.
- ☐ Please send me information on the IRON AGE Mist Sprayer.
- ☐ Please send me information on the OLIVER Tractor line.

Name.....

Address.....

City.....

RFD.....

State.....

Watch for Oliver Days in your area—see the new color movie "Spraying for Profit."

MAKE YOUR CROPS PAY... SPRAY THE IRON AGE WAY

**WORK GOES
FASTER, EASIER**
with SEYMOUR SMITH tools



**The choice of tree men
for generations**



No. 11
Pruner Head

Center
Cut
Action



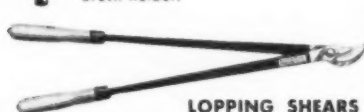
"TELEPHONE" TREE PRUNERS

The very finest of tree pruners! Virtually unbreakable heads, selected spruce poles with positive locking, seamless aluminum joints. Simple, powerful action. No. 11-18, 1" capacity, \$16.00. No. 12-18, complete pruner 1 1/2" capacity, with 18 foot pole, \$24.00. Extension sections available.

POLE PRUNING SAW

No. 20 SAW HEAD
Head only \$4.00
with 18 ft. pole \$15.85

16" needle-tooth saw blade fits in 3 different positions. Extra large hook for pulling out loose branches. Paint brush holder.



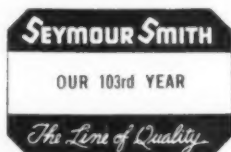
LOPPING SHEARS

6 models to choose from. Cut up to 2" branches with ease.

NEW, FINEST EVER PRUNING SAWS

A new Seymour Smith development — the fastest, easiest cutters on the market. Complete line of 6 models covering all requirements up to chain saw work.

FREE: Send for full descriptive matter and prices on all Seymour Smith products for professional pruning and tree care.



SEYMOUR SMITH & SON, INC., 31002 Main St., Oakville, Conn.

FIRE BLIGHT

(Continued from page 16)

cells which results in the characteristic dieback.

The extent of damage depends on the vigorous nature of the infected limb. Bacteria may travel as much as five feet during one season in the more vigorous branches. The average limb dieback is approximately 12 inches in vigorous orchards. In less vigorous blocks, twig infection will not extend beyond three inches and on many less susceptible varieties such as the Winesap, infections may not exist beyond the blossoms.

While the first infections will occur during the early bloom period, new infections will occur as late as July depending, of course, on weather conditions. For the past two years blight intensity has more than trebled during July in Illinois. Thus, while we think in terms of applying protective measures in the early bloom period, it appears as though continuous protection through the spring and early summer period is actually needed.

It is impossible to estimate the damage that repeated annual fire blight infections may cause in an orchard. A few blocks of 12-year-old Jonathan trees have actually been bulldozed in Illinois because of the severity of fire blight and resultant lack of production.

There has been little improvement in blight control practices for the past 20 years. It would be repetitious to describe the various sanitary measures used to reduce blight. In the western states where the organism is apparently less virulent or the weather conditions are less desirable for blight incidence, the proper sanitation methods have been very satisfactory. Such practices are worthwhile but almost impossible with large acreages.

Bordeaux Most Effective Spray

Bordeaux mixture still remains the most effective spray to reduce fire blight infections. Possible injury is the only objection to its general use. There is a recent tendency to reduce the concentration of Bordeaux mixture and increase the number of applications which has merit.

The standard recommendation in the Midwest now is a 1-3-100 Bordeaux mixture in at least two applications at four-day intervals starting when 10 per cent of the blossoms are open. This program has resulted in less injury and has been quite effective in reducing blight infection. It is apparent that repeated applications of low concentrations of chemicals (providing they are lethal) at short intervals are more effective than depending

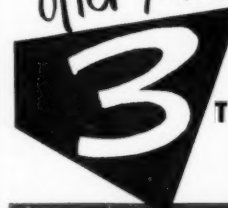
CAPTAN 50-W

(FUNGICIDE 406)

and

MAGNETIC "70"

offer you a choice of



**3 SPRAY
PROGRAMS
TO MEET YOUR
SPECIFIC
PROBLEMS**

1. Use a straight Magnetic "70" Sulphur Paste program on apple varieties where finish, color and high quality are not specific problems. Magnetic "70" is still an inexpensive, effective early season fungicide on apples, peaches, cherries and plums.

2. On susceptible apple varieties, such as Golden Delicious, Jonathan and Baldwin, it will pay you to use a straight program of Captan 50-W. Apples sprayed with Captan 50-W are cleaner, brighter and smoother than those sprayed with other fungicides.

3. On susceptible varieties where improved finish and better disease control is desired, use Captan 50-W in combination with Magnetic "70" in pre-pink through petal-fall sprays. This combination spray has proven to be especially advantageous under conditions favoring severe scab infection. Microfine Magnetic "70", used as a quick-setting sticker for the Captan 50-W permits reduced dosages and offers water savings.

SULPHENONE 50-W

A safe, effective, economical material for control of mites.

MAGNETIC "95"

Microfine Wettable Sulphur

Recommended for use in early cover sprays on Apple, Pear and Peach. Perfect for dusting during rains.

MAGNETIC "90"

Microfine Dusting Sulphur

Specially formulated for dusting on wet foliage and during light, misty rains.

"CROWN"

325-Mesh Wettable Sulphur

For summer and preharvest sprays on Peach, Cherry, Plum.

"PERFECTION"

325-Mesh Dusting Sulphur

A free-flowing neutral product for general orchard dusting.

STAUFFER CHEMICAL CO.

420 Lexington Ave., New York 17, N. Y.
221 N. La Salle St., Chicago, Ill.
Houston, Texas • Apopka, Florida

AMERICAN FRUIT GROWER

on the residual toxicity of higher dosages applied less frequent.

Some growers have found that a number of leeward applications at short intervals through the blooming period will save material and will still reduce infection effectively. In any case, Bordeaux mixture may cause fruit russet to develop later so most growers remain in a quandary.

Promising Chemicals

Recent experiments have indicated that some other materials may partially reduce blight infections. Many of the newer materials do have the advantage of being less injurious. Of the more promising chemicals, formulations containing 75 per cent zineb (zinc ethylene bis dithiocarbamate) have received considerable attention. Zineb is very effective for scab control and apparently is noninjurious. Thus, it can be used in as many sprays as a grower wishes to apply. Unfortunately, zineb is more expensive than sulfur which will limit its general use as a scab protectant. In my opinion, however, when used through the bloom period, it will consistently reduce blight infection over the years but in any one year under weather conditions ideal for infection zineb may fail to give satisfactory results.

Calcium hypochlorite is strictly experimental but has attracted much attention and may be used more extensively in the future. Bloom applications in grower tests in 1952 indicated it to be about as effective as zineb and more economical. This material is strictly an eradicant type of spray and probably serves to disinfect the live cankers and other plant tissues.

No Ideal Preventative

It is doubtful if any of the chemicals used for blight control act in any manner but to disinfect the tree. Residual toxicity is certainly not a known factor in the control of any other plant pathogenic bacteria. For this reason blight reduction appears to be in direct proportion to the number of applications.

Another group of materials which appear to be promising in consistently giving some fire blight reduction over the years are the organic mercury compounds. Here, again, repeated applications at four-day intervals through the bloom period will be more effective than only one bloom spray.

Thus, we are still looking for the ideal fire blight preventative. Proper sanitation measures plus frequent spring and early summer applications of any of the above materials will reduce infection but will seldom give complete control.

THE END

FEBRUARY, 1953

with NIAGARA'S
"NO-FROST"

YOU HOLD FRUIT
AT PEAK QUALITY



You get quicker "pull-down" to the right core temperature.

You get your full crop into protected storage faster, with no defrosting interruption.



YOU easily absorb the "live load" of open doors, warm air and warm boxes while you are filling your building.

You quickly get and hold uniform temperature throughout your storage building.

You get and hold high humidity in storage, holding your fruit at peak of quality.

Temperature never rises while you are storing or holding fruit.

You save space in your building for more profitable storage.

You save on power and on all refrigeration costs.

You save labor and get the simplest, easiest-handled refrigeration system.

You keep your fruit better and more saleable at higher prices and increase your profit.

Find out now how to do this—write

NIAGARA BLOWER COMPANY
Dept. A. F., 405 Lexington Ave., New York 17, N. Y.
Field Engineers in Principal Cities

CONCENTRATE METHOD IN NEW YORK

(Continued from page 20)

even tried concentrating, and the percentage among the smaller growers undoubtedly is lower.

The difference between the two regions seems partly due to a greater readiness on the part of eastern New York growers to try new things, partly to the activity of the investigators and machinery company representatives in the two areas, and perhaps partly to the fairly frequent occurrence of thick trees, winds from Lake Ontario, and better orchard water supply systems in western New York.

Even in western New York a considerable number of growers last year made their first cautious and successful trials at two, three, and four times concentration, and a few commenced operating machines designed for higher concentrations.

The increase in acreage under concentrates was largely due to adapting powerful air-blast sprayers that originally applied standard mixtures. Since, in going to concentrations up to 4X, the only required change in Speed sprayers and similar machines

is a change to pipes and nozzles or nozzle caps with a lower delivery rate, the owners of such outfits do not hesitate so much to switch from dilute spraying as they do to buying a new sprayer designed exclusively for use with concentrates.

Not only is their additional investment small, but they can easily change back if they want to. Usually, however, their subsequent change is to slightly higher concentrations rather than back to dilute sprays. An appreciable number of the heavier air-blast sprayers were delivered as new machines in 1952 with nozzles for two to four times concentration.

With the newly purchased spray machines adapted exclusively to concentrates or to concentrates and dusts the growers who operated with due consideration to the capacity and the characteristics of the particular outfit usually got along fairly well. Where they drove as fast as they would with a machine of greater air-blast of the same or another make, they sometimes lost control of scab or insects. A basic philosophy of successful users of concentrates has been to drive even slower than necessary for coverage the first year, then later cautiously increase the speed, always regarding perfect insect and disease control as more important than speed of coverage.

Some concentrate spray machines have been handicapped by faulty mechanical failures such as overheating of engines or slippage of belts. These difficulties have sometimes discredited the concentrate method, when they should be charged to the newness of the particular machine.

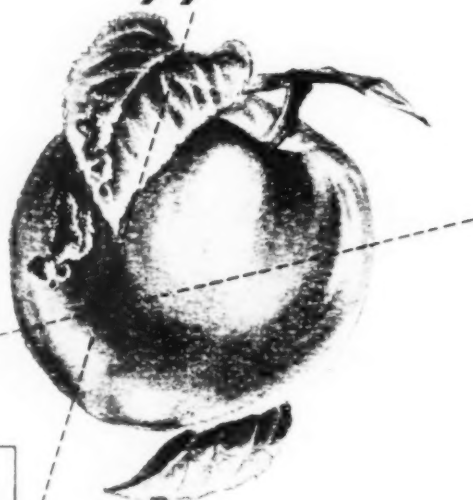
Man Power Problems Crucial

Growers with sufficient acreage and without exceptionally difficult terrain, usually regard high-powered machines that will deliver toward either side or both sides at once, to be the most economical per bushel of clean fruit. Two or three smaller machines might cover the same acreage per day but would require at least one operator per machine, and often extra men of ability are impossible to get.

Small, fixed-outlet machines often fail to produce thorough coverage if trees are thick or even if they are not thick, if they are large, and if any wind is blowing. In a small orchard, in case an extra man is available, a machine with a flexible tube, manually operated, may save enough material to pay for the extra man.

When skillfully operated, it may cover the trees better than a small delivery machine with a fixed outlet. One flexible-tube machine, for use with sprays from dilute to eight times concentration, is under development

Prevent Apple Scab



PURATIZED AGRICULTURAL SPRAY

Commercial growers all over the country praise

Puratized Agricultural Spray — wouldn't be without it. They know how it **stops scab**, right after infection, even before you can see it.

You, too, can protect your apples against dollar losses from apple scab, **and get rid of it fast**, with this easy-to-use, economical fungicide.

To you, it means a bigger and better crop, fancier apples.

Get Puratized Agricultural Spray now and spray early for thorough control.

Consult your local dealer or write today for full details.

allowhur

CHEMICAL CORPORATION
NEW YORK, N. Y.

Distributed by:

NIAGARA CHEMICAL DIVISION; FOOD MACHINERY & CHEMICAL CORP., Middleport, New York
GENERAL CHEMICAL DIVISION; ALLIED CHEMICAL & DYE CORP., 40 Rector Street, New York City

at Cornell, under the direction of Professors K. G. Parker and C. W. Terry.

Under severe conditions, especially in summer when foliage is thick, it may be necessary to drive 20 per cent slower with concentrate than with dilute sprays with the same machine to get equal control. This applies to Speed Sprayers and Air Kings as well as to smaller machines.

Growers doing concentrate spraying usually prefer to reduce driving speed when necessary, rather than change nozzles and go back to dilute spraying. However, both options are available, and, as noted later, the desire to use certain materials may tip the balance in favor of making an occasional dilute application.

Injury Risk

Where materials are at the borderline of safety to the tree with dilute spraying, the injury risk may be increased by using concentrates. Examples are nutritional sprays like urea (NuGreen, etc.) and Epsom salts,

HANDY ANDY



Dusting low-growing crops is easy with this light air-cooled gasoline engine duster made by Leslie Curtis, Belknap County, Gilford, N. H. Mounted on an aluminum frame, it is easily carried by two men. The duster uses a 2 h.p. two-cylinder Power Products gasoline engine. A 150-foot swath may be dusted at one time and several acres covered with one filling. This dusting rig also has been successfully used on apple trees and is handy wherever it is impossible to drive or use heavy motorized equipment.—Charles L. Stratton.

the "hotter" dinitro (DNBP) insecticides at the dormant stage, parathion and other phosphate insecticides on the McIntosh family, and the auxin or hormone type sprays for thinning or drop prevention.

Such sprays, with suitable precautions, often are applied as concentrates, but growers contemplating their use should weigh the relative advantages of regular and concentrate formulas. The dangers are greatest when close planting necessitates having the outlet very close to the foliage.

Because there is no runoff, concentrate spraying sometimes causes too

(Continued on page 46)

FROM *dilute...*



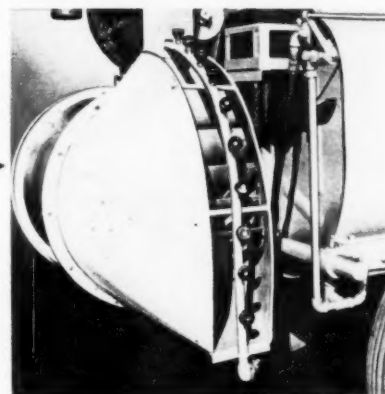
Here is a Myers dilute sprayer with the famous *Silver Cloud Oscillating Spray Head*. If you prefer a dilute sprayer, this Myers unit is still your best tool. But . . .



TO *concentrate*



. . . if you want to convert to concentrate spraying, you can fit your dilute sprayer with this *new Myers concentrate blower* attachment with orchard outlet. It will give you concentrate spraying at its best at tremendous savings in initial cost, spray chemicals, labor and time.



easy...inexpensive...with **new Myers conversion unit**



Under many growing conditions concentrate spraying is so much more economical . . . so much more satisfactory . . . growers accept it as best. But up until this new Myers Concentrate conversion unit, small or medium-sized growers have not been able to afford the higher initial cost of a concentrate sprayer.

Now, at comparatively small cost, you can convert any high-pressure dilute sprayer to a concentrate sprayer. This Myers concentrate blower attachment is available with either orchard outlet, or field crop outlet. You can spray concentrate *how* you want . . . *when* you need. Ask your community Myers dealer to show you the unit you're interested in . . . or mail coupon below.

Myers orchard concentrate. A big capacity, one-man, high speed sprayer. Saves 25% spray materials, 90% water; takes 50% fewer tank fillings. Blankets every twig, leaf, blossom or fruit with mist of proper-size spray droplets propelled in a high-pressure, oscillating air stream.

MORE BUYERS BUY MYERS

because Myers Power Sprayers do more jobs . . . better.



The F. E. Myers & Bro. Co.
294 Fourth Street, Ashland, Ohio

Please send free catalog

☐ Myers Orchard Concentrate
☐ Myers Concentrate Blower Attachment

Name _____

Town _____ State _____

County _____ R.F.D. _____

Something New has been added to that "Good old Country air"



Today, the dozens of new insecticides used for pest control are bringing new breathing hazards to country air. Parathion, E.P.N., Dieldrin, Aldrin, T.E.P.P., H.E.T.P., O.M.P.A., Systox, although many times more effective than old-fashioned sprays, are many times more dangerous to use. Combating these new hazards calls for dependable breathing protection.

Providing this essential protection demands a careful study of each individual hazard. At M.S.A., in the world's largest research laboratory devoted exclusively to safety, men with many years of experience in developing respiratory protective equipment bring their knowledge to these problems. Whatever the threat, these men come up with masks that let workers breathe in safety.

Matching the right breathing protection to the hazard is not a new business here at M.S.A. We've developed masks to guard against hundreds of different toxic conditions in every industry. So, when new insecticides brought new hazards to that "Good Old Country Air"—we were on the job to shield you from them. When you need respiratory equipment, you'll find the best at M.S.A.



Breathe Safely while spraying ... use the M.S.A. Farm Spray

RESPIRATOR—Why take chances during outdoor applications of Parathion, E.P.N., Dieldrin, Aldrin, T.E.P.P., H.E.T.P., O.M.P.A., Systox, when it's so easy to be safe? This compact, comfortable respirator, with recently accepted new type filters, does an effective protection job. Cartridges and

filters are easily replaced, and fit in-use M.S.A. Farm Spray Respirators. Strong, non-clogging exhalation valve prevents leakage on inhalation. Get all the facts, write for bulletin.

DEALERS WANTED—Get extra business and profit by handling the Farm Spray Respirator. Your present customers are your best prospects. Be first in this rich, ready-made market. Every sale means automatic repeat business on cartridges and filters. Write, wire, or phone for complete price and product information.



MINE SAFETY APPLIANCES COMPANY
Braddock, Thomas and Meade Streets
Pittsburgh 8, Pa.

76 Branch Offices at your service in the
United States

CONCENTRATE METHOD

(Continued from page 45)

heavy a deposit near the outlet, and unless precautions are taken, the deposit tends to be too light in parts of the tree farthest from the outlet, but careful adjustment and operation minimize these irregularities.

Many air-blast attachments to high-pressure sprayers have been sold during the past year. Most makers of such equipment regard them as stop-gap devices for extending the versatility of good high-pressure rigs. They make it possible to apply sprays up to four times or greater concentrations, and, like some other spray booms, enable the tractor operator to do the whole spray job. Usually, the hydraulic sprayer is responsible for half to two-thirds of the "carry" of the spray, so results often are disappointing where the attachments are mounted on sprayers that will not carry fairly high pressure or are not in first class condition.

It usually is found that the air-blast on even the largest conversion units is barely sufficient for the best coverage, so the lower-capacity units are unsuitable for concentrate sprays even under moderately difficult coverage conditions. Where a new machine is being purchased, it is much more economical and satisfactory to buy an air-blast sprayer rather than a high pressure sprayer plus an air-blast conversion unit.

Flexibility Desired

Growers doing concentrate spraying are dissatisfied with some features of present model machines. They want more flexibility in the outfit so it will be easier to make the necessary changes when they go from a block of peaches or cherries to a block of mature apples then to a block of young trees. They would like easier ways to shut off the liquid nozzles at the top and the bottom of the air stream. They would like convenient, easy ways to tilt the air stream upward or downward from the tractor seat as they continue to spray, and they would like to be able to widen or narrow the pattern of the air blast as they go down a row. They would like longer wearing nozzles of clog-proof design, bigger-capacity filling screens, better agitation and easier ways to vary the amount of agitation. They would like the option of larger tanks on some of the machines.

Obviously, not all of the complaints apply to all machines to the same ex-

Advertisers will be glad to send you details of their products. Be sure to mention **AMERICAN FRUIT GROWER** when you write.

tent. They would like the maker of each air-blast sprayer to provide more definite instructions on how to nozzle and operate the machine at each concentration and on each tree size. Specific advice on speed of driving expressed as miles per hour is an important aspect. They would like to have their dry materials available in larger packages than the usual three or four pounds so that a combination of large and small bags would provide the amount needed in a tankful without the necessity of weighing.

Use A Speedometer

Each year I become increasingly aware of the importance of a speedometer as an aid to even coverage. If he has a speedometer, the driver thinks about rate of travel and attempts to overcome irregularities in speed, due to topography, and the manager can specify the speed he wants the operator to travel in each block. If a wheel tractor is used, the best place for a speedometer is on the tractor, but it can be mounted on the sprayer.

Despite some sensational claims, it is impossible to give an unequivocal answer to the question of whether equal control can be secured with less material by using concentrate sprays. Great care is required in evaluating evidence on this complicated matter, and far more information is needed. The ramifications of the problem extend far beyond what one would think of on the spur of the moment. Fineness of spray particles and evenness of distribution through the tree are just two of the several important factors that would influence the answer. In view of the uncertainties on this point, growers should make their decision on whether or not to use concentrates on the basis of the better established and less illusive criteria presented in the earlier part of this article.

Analyze Amount Used

If the amount of chemical used in a given block of orchard differs by more than 20 per cent from what it has been customary to use in dilute spraying, a careful analysis of the situation should be made. Possibly the delivery rate of the nozzles or the concentration of the mixture should be changed. Growth of the trees, variations in abundance of pests and in rainfall must be taken into account in making such analysis.

It is generally conceded that the cost of materials is lower for concentrates than for dry dusts or wet dusts, and usually the control is as good or better. For that reason, a dust attachment on a concentrate sprayer is of doubtful value.

THE END

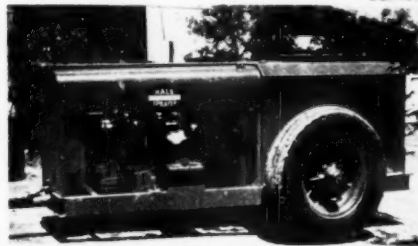
THE HALE CENTRIFUGAL ORCHARD SPRAYER

Cuts Spray Time Over 50%—Labor Costs Over 60%



"No worms on my cherries," says Van Sant. His Hale Sprayer at the left, in action shows why—thorough, complete penetration and coverage.

"I'm spraying parathion on my smaller trees; hence the mask and goggles," says Van Sant. Small tractor pulls with ease in second gear.



Sturdy, compact, light in weight, the Hale Centrifugal Sprayer pumps any desired capacities and pressures up to 100 U. S. GPM at 600 lbs. as fast as your tractor can run through grove or orchard. Few moving parts means minimum maintenance.

Mr. B. F. Van Sant, Fort Collins, Colorado, wrote the following letter to one of our field men, Jim Haddon.

Dear Jim:

I am enclosing a couple of snapshots of my sprayer in operation . . . I was spraying with parathion, hence the mask and goggles.

If you will recall I was a little worried that my . . . tractor would not pull it but am very much pleased to report that it does so with ease and that I use my second gear most of the time.

The sprayer does the best job I have ever seen and I can thoroughly recommend it to anyone. We just did not have any worms this year on cherries where I used my sprayer so know that it did a thorough job.

Regards to you and the family

As ever,

Van

*Name supplied on request; a two-plow tractor

Perhaps you would like to obtain similar results. If so, write us today stating number of acres in orchard or grove.

SPRAYER DIVISION

HALE FIRE PUMP CO.
CONSHOHOCKEN, PA.

DON'T BE FOOLED BY IMITATIONS

The Bartlett Compound Lever Tree Trimmer has been successfully manufactured for many years and like the story of the man who made a "Better Mouse Trap", it is flattering to know that a product is worthy of imitation but like so many attempts to take the credit for originality, those who copy soon find themselves "out on a limb", and speaking of limbs, why not compare the Bartlett No. 1W Pulley Type Tree Trimmer with others on the market to make sure you are not being fooled.

Bartlett tree trimmers, as well as all of our other products, are made of the highest grade materials obtainable and we will continue to serve our customers to the best of our ability to give them full value for years to come.



Send for catalog No. 33
Showing a complete line of tree trimming equipment.

BARTLETT MFG. CO.

3003 E. GRAND BLVD.

BOX 44

DETROIT 2, MICH.

KILL SCALE and other Harmful Insects! SUNOCO Self-Emulsifying SPRAY OIL

Thorough, year-by-year spraying with Sunoco Self-Emulsifying Spray Oil will pay off in healthy, pest-free fruit trees. Orchardists have relied on it for more than 25 years to control nearly all kinds of scale and other insects. Sunoco Self-Emulsifying Spray Oil is easy to use, can't be beaten for economy.

You can get immediate shipment in tank cars, 55-gallon drums, or 5-gallon and 1-gallon cans. For prices and more information, get in touch with your nearest Sun office.

SUN OIL COMPANY • Philadelphia 3, Pa.

MAIN DISTRICT OFFICES IN U.S.A.

CONNECTICUT Bridgeport Hartford	NEW YORK Albany Binghamton Buffalo Long Island City Newburgh Peekskill Rochester Syracuse
DIST. OF COLUMBIA Washington	OHIO Akron Cincinnati Cleveland Columbus Dayton Toledo Youngstown
FLORIDA Jacksonville Miami Tampa	PENNSYLVANIA Allentown Beaver Brownsville Erie Exeter Harrisburg Johnstown Philadelphia Pittsburgh Reading Williamsport
ILLINOIS Chicago	RHODE ISLAND Providence
INDIANA Fort Wayne Indianapolis	TEXAS Dallas
MAINE Portland	WEST VIRGINIA Huntington Wheeling
MARYLAND Baltimore	
MASSACHUSETTS Boston Lawrence Worcester	
MICHIGAN Detroit Flint Grand Rapids Jackson	
NEW JERSEY Atlantic City Hackensack Newark South Amboy Trenton	

SPRAYING APPLES

(Continued from page 25)

weather predominates during the early part of the season.

Leaf injury from NAA sprays can be largely or entirely avoided by delaying the application until two or three weeks after petal fall. The lack of injury at this later stage is probably due to the completion of certain growth processes by the spur leaves. Recognition of this fact has brought about a shift to later sprays.

Adverse Effects

Recently NAA sprays made two to three weeks after petal fall have resulted in adverse effects on the fruits of some early varieties by preventing their abscission and setting off the ripening processes. It is as if the fruits of these early varieties had reached a stage of physiological development at which the NAA treatment produced the harvest effect rather than the thinning effect. In New York several instances of this kind have occurred with Yellow Transparent and Oldenburg, resulting in complete loss of the crop.

Orchard experiments during the past two years have shown that naphthaleneacetamide (amide) will also reduce the set of apples. This compound has caused no dwarfing or other formative effects on the foliage when applied during the late bloom or at the petal fall period.

While the concentration of NAA commonly used for thinning apples ranges from 10 to 20 parts per million (p.p.m.), the concentration of amide required for the same degree of thinning of a given variety is two to three times greater. Furthermore, there seems to be a wide range of concentrations over which amide can be used without seriously over-thinning or defruiting the trees.

For example, during the 1952 season petal fall sprays of amide resulted in satisfactory thinning of the following varieties throughout the range of concentrations indicated: Yellow Transparent, 20-40 p.p.m.; Oldenburg, 20-60 p.p.m.; Early McIntosh, 30-60 p.p.m.; Baldwin, 40-80 p.p.m.; Golden Delicious, 25-100 p.p.m.; and Northern Spy, 15-45 p.p.m.

Beginning with the minimum concentration for each variety, thinning increased with an increase in concentration up to a point where little further reduction in set occurred. In these tests NAA treatments at conventional concentrations applied at the same time caused considerable leaf injury on all varieties and resulted in overthinning of some and almost complete defruiting of others. There

KOHLER ENGINES

4-Cycle, Air-Cooled



Power for garden tractors, mowers, pumps, sprayers, snow removal equipment, elevators and hoists, portable saws, concrete mixers, compressors, grinders, industrial and lift trucks, and a wide range of tools and equipment for industry, construction, farm and home.

Engineered and built to the quality standards that have won acceptance for Kohler Electric Plants the world over.

Kohler Co., Kohler, Wis. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT
ELECTRIC PLANTS • AIR-COOLED ENGINES
PRECISION CONTROLS

Want the Joy of a
Garden
without
the
hard
work?

GET A CHIEF

- FORWARD AND REVERSE SPEEDS
- Single Grip Control
- Safety Reverse
- 3 Models—1 and 2 wheel—2-3½ H.P.
- Implements for every garden tractor job.

• Easy to attach—simple to operate

WRITE FOR LITERATURE

Choose the Chief...



THE GREAT LAKES TRACTOR CO.
ROCK CREEK, OHIO

GRAFTWAX TREE HEALANT

Since 1920 excels in grafting; cures tree and plant wounds, blights, used for cavities. Repels rodents. Adhesive, waterproof. IT SEALS AND HEALS. APPLY COLD. Put on in 1 lb. and 6 lb. cans. \$1 per lb., \$1.99 per 2 lbs., \$5.95 per 6 lbs. (Postpaid). W. of Mississippi R. add 15¢ per lb. Free Sample.

CLARION DEVELOPMENT CO. Dept. A, Clarion, Pa.
AMERICAN FRUIT GROWER

was considerable cloudy, cool weather preceding and following the 1952 bloom. Under such conditions the effects of NAA may be rather drastic.

The choice between a DN bloom spray and a postbloom hormone spray for apple thinning depends upon the locality, the variety, and numerous environmental conditions. In the fruit districts of the northwest the DN bloom spray has proved more consistent and effective than the auxin spray, while in midwestern and eastern sections the reverse is true.

DN bloom sprays are used rather extensively for thinning apples in fruit areas in the central part of Washington. In eastern areas the DN spray for thinning is limited to a few heavy setting varieties such as Wealthy and Baldwin. For vigorous Wealthy trees some growers use a DN bloom spray and supplement it with a postbloom hormone treatment. But for most varieties the postbloom hormone spray is preferred.

In view of recent experiences with NAA on summer varieties, this material can no longer be suggested for thinning these kinds. The late bloom or calyx spray causes too much foliage injury, while delaying the treatment for two to three weeks to avoid this injury may ruin the fruit. Amide appears to be adapted for thinning these varieties as well as many others since it can be used in the late bloom or petal fall stage without visible leaf injury.

Summer apples have a short growing season, consequently they should be thinned rather heavy and at the earliest possible stage of development so that growth will be rapid from the start and good commercial size attained by harvest. In connection with fruit bud formation and repeat bloom, early thinning accompanied by good foliage is important with all varieties.

Sprays to Fertilize Trees

The mineral nutrients required for normal growth of apple trees are absorbed from the soil by the roots. It is also recognized that certain nutrients may be absorbed and assimilated by the leaves when sprayed on in a form and at a concentration not toxic to the foliage.

Nitrogen is the mineral element that is most likely to be deficient and annual applications are usually required for good growth and production in sod orchards. The introduction of synthetic urea, an organic material containing about 42 per cent nitrogen, has made possible some new approaches to the nitrogen fertilization program. This material can be added to the spray tank with most of the common insecticides and fungicides.

(Continued on page 50)

NEW...

COROMERC

(POWDERED MERCURY FORMULATION)

for APPLE SCAB CONTROL



COROMERC, a new member to the Corona family of agricultural fungicides, is a **dry, granular, water soluble** product. Tests at Agricultural Experimental Stations in various apple growing regions have shown this particular mercury formulation to be an excellent fungicide for the control of apple scab. Corona for the first time offers this mercury fungicide for safely burning out primary scab lesions should this disease get a foothold during a

warm, wet spring when other types of fungicides are unable to hold the disease in check.

Recommended for use during the early growing season, and at $\frac{1}{2}$ lb. per 100 gallons of spray solution, Coromerc is packed in 1 lb. and $1\frac{1}{2}$ lb. cannisters for direct addition to most spray tanks.

Competitively priced. Write for Literature.



Your Insurance for Better Crops!

CORONA CHEMICAL DIVISION

PITTSBURGH PLATE GLASS COMPANY

MILWAUKEE, WIS.

MOORESTOWN, N. J.

New... Improved!

Orchardkraft
AIR-POWERED
PRUNER

Saves Labor—two men can prune faster and easier than 4 or 5 men with hand pruners. Pays for itself in labor savings 1st season. Carefully made of best materials for long, trouble-free service. Look at these features: • Very Fast Action • Requires little air • Improved cutting head • Positive grip handle • Cuts limbs up to 1½" diam. • Cuts easier • Light weight. Write for circular, advise us nearest dealer's name.

JOHN C. BACON CORP.
GASPORT, N. Y.

THE PRUNING BOOK

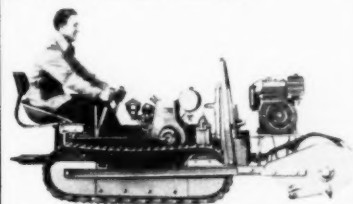
By **Gustave L. Wiltcock**

A well-illustrated and easy-to-follow guide for pruning fruit trees and ornamentals. 172 pages, illustrated.

Send Postpaid on receipt of \$3.00
AMERICAN FRUIT GROWER
Willoughby, Ohio

MIDGET TRACTOR
with **MOTT MOWER**

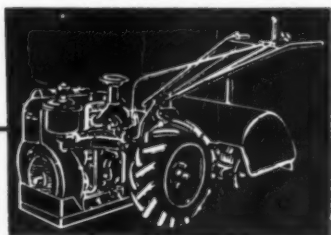
Cuts and shreds tall weeds, brush—forming valuable mulch. With hydraulic lift and bucket ideal for grading, ditching, cultivating.



The "Mighty Mouse" pulls easily in soft mud, sand, where wheels or animals sink. Rush postcard for full details, dealer territory.

MEAD SPECIALTIES CO.

4114 N. Knox, Dept. T-523, Chicago 41



Powered FOR THE TOUGHEST TILLING JOBS!

ARIENS TILLER. Powered for perfect work in any soil! Choice of 3 models: 7, 9, 12½ h.p. 4-cycle Wisconsin engine. 2 speeds forward; reverse. Heavy-duty steel tines. Full width tillage; 2 to 10 in. deep. Ruggedly built; field-tested—thousands in use! America's first rotary tiller, still America's best!

Write for information

**Ariens
COMPANY**
139 Calumet St. Brillion, Wisconsin

NEW FOR FARM SPRAYING

GunJet... the new heavy duty unit for orchard spraying, cattle spraying and related uses. Exclusive features include non-jamming valve assembly, easy parking adjustment, and hardened stainless steel tips. Write for Bulletin 65.



BloomJet Spray Nozzles... supplied in variety of types producing spray pattern widths up to 66 feet. For weed control in grains, grasses and other general broadcast uses such as spraying of liquid fertilizers. Write for Bulletin 66.

Pat. Nos.
2,521,978
2,619,898
and
Patents
Pending

SPRAYING SYSTEMS
TeeJet
SPRAY NOZZLES

AND... for farm spraying of every kind... TeeJet Spray Nozzles with interchangeable orifice tips. Write for Bulletin 58.

SPRAYING SYSTEMS CO.
3278 Randolph Street • Bellwood, Illinois

SPRAYING APPLES

(Continued from page 49)

It should not, however, be mixed with lime-sulfur since this combination will cause leaf injury.

The use of 5 pounds of urea per 100 gallons of water in the petal fall spray and the next two cover sprays will usually give a satisfactory nitrogen effect, both in terms of growth and yield and in terms of color and quality of fruit at harvest. Applying one or two of these sprays in the pre-bloom period or making less than three applications may eventually result in decreased growth and yield but color likely will be excellent. Three or more applications following the petal fall may result in good growth and yield but a reduction in fruit color.

A pound of actual nitrogen as urea in early postbloom sprays seems to have about the same effect on growth, yield, and fruit quality as a pound of nitrogen in any of the common inorganic salts broadcast under the branches of an apple tree in the early spring. Although spray applications of urea give rapid and marked nitrogen responses, over a period of years the amount of nitrogen applied must be equal to an optimum ground application to maintain these responses.

The application by sprays may enable the grower to exercise somewhat more control over the nitrogen level of the trees than is possible with ground applications. In experiments with the McIntosh variety in New York, urea sprays shortly before the June drop have markedly increased fruit set. This could be desirable or undesirable, depending upon the original set and the extent of the June drop.

Sprays to Control Drop

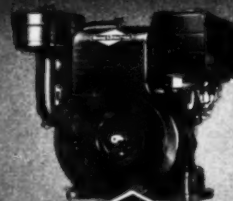
Spraying to control harvest drop has been a commercial practice since 1940 when naphthaleneacetic acid was first introduced for this purpose. This material gives good results on most summer and fall varieties. On McIntosh it has a very limited period of effectiveness. One application controls the drop for only about a week. NAA has not proven very satisfactory for late varieties such as Baldwin, Spy, Rome, and Winesap.

A material having a short period of effectiveness must be applied just prior to the beginning of drop if it is to give control during the harvest. At this time, the foliage on late varieties may have reached an advanced stage of senescence from frost or other causes. Under such conditions the NAA may not be absorbed or translocated, thus having little or no effect on drop.

1,000,000

ENGINES

built in ONE year



4
CYCLE
BRIGGS & STRATTON
GASOLINE
ENGINES

It's a new world production record — never before accomplished. More than one million engines were built, sold and shipped in 1952, proof that Briggs & Stratton air-cooled, 4-cycle engines are the "preferred power" everywhere.

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U.S.A.

THE WORLD'S MOST WIDELY USED SINGLE-CYLINDER GASOLINE ENGINES

PLANT ILGENFRITZ Trees

This Spring

105 years of Nursery Experience to give the best

If you are a fancier of roses, shrubs and ornamental trees write for our new 1953 Color Catalogue

SWEET CHERRIES

Black Tartarian Napoleon
Hedelfingen Schmidt
Windsor

One and Two year old trees	10 trees each	50 trees each	100 trees each
11/16" caliper	\$1.85	\$1.55	\$1.45
9/16" caliper	\$1.55	\$1.30	\$1.20
7/16" caliper	\$1.35	\$1.05	\$.95

These prices F. O. B. Monroe

Write for prices on Montmorency Cherry

PEAR TREES

Anjou Flemish Beauty Two year old Trees	Clopp's Favorite Bosc 10 trees each	50 trees each	Bartlett Seckel 100 trees each
11/16" caliper	\$1.50	\$1.10	\$.85
9/16" caliper	\$1.35	\$.95	\$.70
7/16" caliper	\$1.05	\$.75	\$.55

Prices are F. O. B. Monroe

Write for our Growers Quantity Price List for the other fruits

**THE MONROE
NURSERY**

ILGENFRITZ NURSERIES, Inc.
Dept. F.G. Monroe, Michigan

Desirable Territories open for salesmen of fruit trees and other nursery stock.

AMERICAN FRUIT GROWER

2, 4-dichlorophenoxyacetic acid (2, 4-D) has a long period of effectiveness on Winesap, Stayman, and a few minor varieties but is specific for these and entirely ineffective on all others.

New Hormone

During the past two seasons a new drop control hormone, 2, 4, 5-trichlorophenoxypropionic acid (2, 4, 5-T.P.), has been available for grower use. This material appears effective on all commercial varieties. It gives good control of McIntosh drop for about three weeks and has a longer period of effectiveness on most other varieties.

Recently it has been shown that 2, 4, 5-trichlorophenoxyacetic acid (2, 4, 5-T.A.), a material closely related to 2, 4-D, will control the harvest drop of Early McIntosh, McIntosh, and Delicious just as well as 2, 4, 5-T.P. It is not known how many other varieties will respond to 2, 4, 5-T.A. Therefore we now have more choice of materials for drop control than several years ago.

Since these new ones are more effective than NAA and in most cases will give good control of drop throughout the harvest, the grower might well divide his attention between the drop problem and the possibility of an overmaturity problem. Like other good practices, the use of hormones for this purpose has certain limitations.

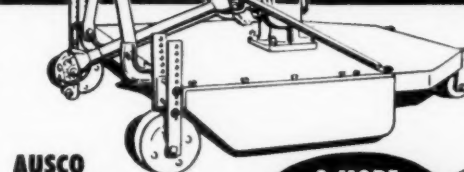
It is easy to see that if apples hang on the tree longer than they normally would they will be riper than normal. This is the simple "age" factor and is an indirect effect of the hormone in delaying drop. The fact that these hormones can directly ripen apples has not always been appreciated; that is, the hormone can directly stimulate ripening as a chemical effect on respiration.

The effect on ripening is greater when the harvest weather is hot than when it is cool. Summer and fall varieties up to and including McIntosh are the ones most likely to suffer a loss in firmness from the treatment. In order to avoid an overmaturity problem with these varieties, the weakest concentration of hormone and the latest date of application commensurate with drop control should be employed.

The late, hard varieties may not be influenced to any measurable extent. If protection from drop is needed on these varieties they should be sprayed before the foliage is frosted. Harvesting apples for storage should not be delayed for better-than-normal color just because the fruit is not dropping. Increased color associated with hormones seems to be a direct result of increased ripening. THE END

FEBRUARY, 1953

NEW COST-SAVING AUSCO FARM IMPLEMENTS



AUSCO ROTARY SHREDDER AND CUTTER

A multi-crop, all season implement. Perfect for cutting and shredding all stalks, including corn, cotton, sorghum and tobacco stalks. Can't be beat for clearing brush, controlling pasture, shredding orchard cuttings, etc.

Especially designed for heavy work. Will outperform and outlast any other make because it's ruggedly built throughout.

Use coupon below to get more information on the Ausco Shredder and Cutter and the other Ausco implements shown at right.

3 MORE Money-Saving AUSCO Implements



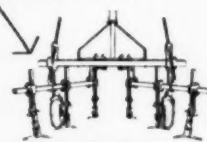
AUSCO'S Famous Wigle Hoeing Attachment

Does work of 6-8 hand hoes, in all row and hill crops. Hoes 5 to 7 acres per day. Mulches soil encouraging healthy growth. Thousands now in use.



AUSCO 3-point Hitch Adapter Kit

Make your tractor worth more by adapting it to use modern lift-type implements. Ruggedly designed for years of trouble-free service.



AUSCO One-Row Cultivator

Wigle Hoeing Attachment fits this cultivator to a "T" for once-through cultivating and hoeing. Floating gang, trip shank. Reasonably priced . . . built for service.



MAIL COUPON TODAY

Farm Implement Div., AUTO SPECIALTIES MANUFACTURING CO., St. Joseph, Mich.
(Makers of Ausco Lambert Double Disc Tractor Brakes and Clutches)

Gentlemen: Send me FREE literature and name of nearest dealer for the AUSCO implement I have checked:

Name _____ RFD No. _____
Address _____ City _____ State _____
() Wigle Hoeing Attachment
() Rotary Shredder & Cutter
() One-Row Cultivator
() 3-Point Hitch Adapter Kit

KILL SCALE RED MITE APHIS etc.

Kill more overwintering insects

by spraying with Scalecide—the outstanding dormant oil spray since 1904. Controls scale, red mite, aphid and other overwintering insects. Now—before new growth starts—spray your fruit trees, shade trees, ornamentals and shrubs with Scalecide. Get it today at your seed, hardware or garden supply store.

Prices East of Mississippi River

1 qt., \$1.15; 1 gal., \$2.75; 5 gals., \$9.30

PROTECT YOUR FRUIT TREES from chewing insects and fungous diseases during the growing season by spraying with Pratt's Fruit Tree Spray—a complete spray in one package for all types of fruit. 1 lb., 85c; 3 lbs., \$1.50.

B. G. PRATT CO., 163 RIVER ST., HACKENSACK, N. J.

There's a Pratt Spray for Every Need



PRUNE THE NEWAY

save time—labor—money

The Neway Hydromatic Pruner is light, strong, long lasting. The only automatic pruner utilizing hydraulic positive power.

Cuts limbs

*Clean
*Smooth
*Fast

Does more
work for less
cost.

Over 200 now
being used by
Ohio Growers

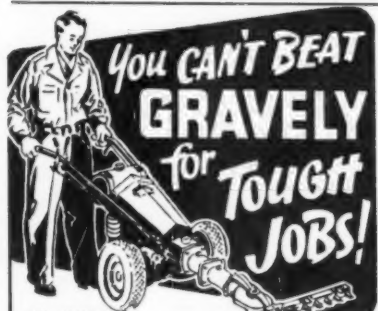


Write today for details

LYND BROTHERS

Eastern United States Distributors for Neway
Mfg. Co., Springfield, Utah

PATASKALA, OHIO



5-HP GRAVELY Tractor

Offers 20 Tools to Save You Work!

Rugged, dependable POWER for day-in and day-out plowing, mowing, cultivating—20 jobs in all! With the powerful 5-HP Gravely Tractor, metal muscles do your toughest jobs—better, faster . . . with less work!

All-gear drive, power reverse. Field tested for 31 years. Only the Gravely does so many jobs so well!

"Power vs Drudgery" tells how to put POWER to work for you! Write today!

GRAVELY
BOX 251 DUNBAR, W. VA.
FIELD-TESTED FOR 31 YEARS

ESHELMAN FOR BETTER
LAWNS
AND GARDENS

1 1/2 HP
Also Power Reverse.
Women can operate it.
Free Catalog. Write
nearest branch:
Eshelman Co., Dept. 152
119 Light St., Balto. 2,
Md. 333 N. Michigan
Ave., Chicago 4, Ill.
105 Lake St., Reno,
Nev.

FROM \$95
MOWS
CUTS
ROLLS
TILLS
SNOW PLOW

THOSE PESKY PESTS

(Continued from page 23)

we do with sulfur. Beginning with petal fall, we used Orthocide 406, a new organic compound, and continued its use throughout the season. The regular insecticide program was followed in conjunction with the new fungicides. This schedule was carried out on a few trees of Golden Delicious, Grimes Golden, Delicious, Stayman, Turley, Red Rome, and Jonathan.

Scab on all varieties was under perfect control. Fruits possessed a very smooth finish, but there was a slight russet on Golden Delicious. From observation, I believe it was slightly less than appeared on sulfur-sprayed apples, though they, too, showed very little russet. Another year may bring us more information. Chart lists the cost of materials per 100 gallons of spray for each application of the regular orchard program. Cost of materials may appear high, but they are purchased in small quantities.

Cost of Application

Cost of an application varies with the materials used, consequently we are always looking for materials which shall replace those which are highest priced per 100 gallons of spray, not necessarily per pound of material. The chart does not include cost of our experimental program for scab control, which was high because of price of new materials.

Our cheapest cover spray was sulfur and DDT combined. Our most expensive occurred on July 7 to 9 when we added parathion and lead arsenate. This mixture was con-

cocted in an effort to make it the last application for the season. It didn't work, as we had to apply another spray for second brood codling moth two weeks later.

It turned out later that we might have omitted the last application anyway without damage. But these things the orchardist frequently does not know in time, so he "takes out insurance." Parathion was included in the fourth cover because a few red mites were beginning to appear. The one application held them down for the remainder of the year. Lead arsenate and DDT were combined because we felt that two insecticides might be more deadly than one.

Reduce Cost in 1953

From the chart we can see many places where we may reduce material costs in 1953. First, we shall use more parathion and less of lead arsenate. DDT will be used in about the same manner as in 1952. EPN will be used only in case of an outbreak of red mites, and then only if it is cheaper than parathion. If lead arsenate is used at all it will be in the petal fall spray. Parathion and DDT will take over the insecticidal program. With some applications they will be used in combination.

We use a 35-gallon-per-minute high-pressure spray rig with one man on a fog-drive gun. To keep abreast of the changing times, this equipment soon will have to be replaced with more modern machinery which can deliver the spray more economically.

Change is really man's greatest benefactor. THE END

BANTA FRUIT FARM 1952 SPRAY PROGRAM

Date & Application	Materials	Per 100 gals.	Cost per 100 gals. of spray
April 16-17; delayed dormant	Dry lime sulfur	8 lbs.	\$1.76
April 21-22; pre-pink	Dry lime sulfur	6 lbs.	1.32
April 26-27; pink	*Wettable sulfur	6 lbs.	.66
May 5-6; petal fall	*Wettable sulfur	6 lbs.	
	Lead arsenate	3 lbs.	1.65
May 14-15; 1st cover	Wettable sulfur	6 lbs.	
	EPN 300	1/2 lb.	1.04
May 26-27; 2nd cover	Wettable sulfur	4 lbs.	
	DDT, 50%	1 1/2 lbs.	1.16
	EPN 300	1/4 lb.	
June 11-13; 3rd cover	Wettable sulfur	4 lbs.	
	DDT, 50%	1 1/2 lbs.	.97
July 7-9; 4th cover	Wettable sulfur	4 lbs.	
	Lead arsenate	2 lbs.	
	DDT, 50%	1 lb.	
	Parathion	1/2 lb.	1.83
July 26-29; 5th cover	Wettable sulfur	4 lbs.	
	Lead arsenate	3 lbs.	1.43

* Fermate was substituted for sulfur in these applications on varieties susceptible to apple cedar rust, at rate of 1 1/2 lbs. per 100 gals.

Average cost per 100 gallons of spray for the season was \$1.31.

AMERICAN FRUIT GROWER

REDUCE SPRAY COSTS

(Continued from page 22)

period of four years helped considerably to speed up the changeover to concentrate spraying.

The cherry and peach growers have not been left out. Certain growers already using air-blast sprayers such as the Bean Speed sprayer and the Friend air-blast sprayer converted their machines for concentrate spraying by using nozzles to obtain finer breakup of the spray liquid. Others purchased concentrate sprayers such as the Buffalo Turbine sprayer, the Myers Silveraire sprayer, or the Hardie Concentrate sprayer.

Air-Blast Attachment Introduced

Also, three years ago an air-blast attachment for conventional, high-pressure sprayers was introduced. This type of sprayer has given the growers operating smaller acreages an opportunity to convert their sprayers to an air-blast unit without excessive machinery costs.

These air-blast attachments were used quite extensively in this state in 1952 with very favorable results. Growers using this method of application recognized the need for heavier pruning and for a slow rate of travel while spraying. Some growers used these machines for concentrate applications of 2X, 3X, and 4X. Many realized the need for night spraying in order to take advantage of the quiet air condition. Night spraying was found to be very satisfactory, as coverage was better and the time of spraying was shortened owing to better conditions under which the applications were made.

The same concentrate sprayers as used for tree fruits are being used now by some orchardists on small fruits. In fact, certain growers with varied programs which include such crops as strawberries, grapes, tomatoes, and potatoes have been adapting their air-blast machines to spray these crops with concentrate mixtures and have been very pleased with the results.

It seems safe to state that probably 10 per cent of the Michigan fruit growers, representing 15 per cent of commercial production, will be using concentrate spraying in 1953.

At the present time the most common concentrations in this state are 2X, 3X, and 4X with a few venturing to 5X and 6X. An occasional grower is using 8X, but he is the exception. The trend is toward the higher concentrations of 5X, 6X, and 8X. This change will be slow and will be made only after experience has been gained with lower concentrations.

THE END

FEBRUARY, 1953



SCARFF'S NURSERY

Fruit Trees and Berry Plants

Most dependable varieties for home and commercial plantings

BARTLETT Top worked on Old Home Stock For Blight Resistance

MELROSE: Ohio's New apple (Jonathan x Red Delicious cross by the Ohio Experiment Station). Firm, crisp, juicy and a fine winter keeper.

HARDY NUT TREES: Chinese Chestnuts, Northern Pecans, Hicans, Hybrid Hazels, etc., all suitable for planting in North Central States.

Send for free 48 page catalog of Fruit Trees, Berry Plants and other Fruits. All finest varieties.

W. N. SCARFF'S SONS Box 131, New Carlisle, Ohio

SPRAYMEN use TOWER'S

FISH BRAND

Garments for complete protection from wet grease oil most acids



Available in oiled or NEOPRENE treated fabrics, TOWER'S suits, coats, and hats afford the utmost in comfort, durability, roominess, and overall protection to spraymen.

Sold by all Good Dealers

Write for Catalog AG



A. J. TOWER CO.
BOSTON, MASS.

1903—GOLDEN ANNIVERSARY—1953

SHAW DU-ALL

GARDEN AND SMALL FARM TRACTORS

Low Cost 1½ to 5 H.P. Walking Models Do All Garden and Yard Work

Fast, Easy



Plow with a 6-7-10 inch plow... plant, cultivate... mow, bulldoze, saw wood... do many other jobs with the Shaw Du-All. 1½, 2½, 3, 5

H.P. machines. Variable speeds, adjustable wheel widths, individual gang tool controls. Power take-off pulley and attachments. Power turn models available.

Powerful 5-8-12 H.P. Riding Tractors, Ideal for Larger Acreage

Famous Shaw design provides lowest cost power for small farms. Handle 10, 12, 14-inch plows. Work 4 to 8 acres daily. Handle all ground preparation and cultivation... mow, rake, cut



wood, spray trees, do many other jobs with power take-off. See the Shaw dealer. Write direct for

FREE CATALOGS low prices complete Shaw line.

SHAW MANUFACTURING CO.
1402 Front St., Galesburg, Kansas
668 AF N. 4th St., Columbus, Ohio

Skibbe

COMBINATION SEED AND FERTILIZER SPREADER



"The Spreader with the controllable spread."
(Reg. U.S. Pat. Off.) Pat. Pending

• Spreads 2 to 50 ft.
Wide or narrow spreads can be directed to either side or both sides or center row, regardless of tractor forward spread. Positive auger feed, controlled from the tractor seat. Will spread mixed analysis as well as pellet type fertilizers.
An Excellent grain and seed broadcaster.
Tractor mounted P.T.O. driven.
Corrosion-proof self-lubricating bearings will not set or freeze up.
Corrosion proof hopper.
Vital valve feed features—stainless steel.
Available in tractor or trailer mounted models.

Write for descriptive folder

SKIBBE MFG. CO., SODUS, MICH.

DOBBINS SPRAYERS

HELP YOU

*Harvest
More
Profits*



DOBBINS High Pressure No. 4285-30 Trailer Power Sprayer in Operation



Let DOBBINS High Pressure Do the Job!

Yes, PROFIT PROTECTION is our business and a dependable DOBBINS Sprayer will do the job! DOBBINS Sprayers are ruggedly built for years of reliable service. OVER 50 YEARS OF IMPROVEMENTS have built DOBBINS High Quality.

For the BEST in Trailer, Cart, Skid, Wheelbarrow or Small Tank Sprayers . . . Always Buy DOBBINS!

WRITE TODAY for the New DOBBINS Power Sprayer Catalog

DOBBINS MANUFACTURING CO., DEPT. 207
ELKHART, INDIANA

Name _____
Address _____
City _____ State _____

Advertisement



From where I sit... *by* Joe Marsh

Chip Pulls a "Pip"

Chip Hanson's a real clever commercial artist. Right now he's whipping up a lot of posters for the Safety Campaign. They all have big headlines like "PLAY IT SAFE!"... or, "A LIVE WIRE CAN START A FIRE!" Things like that.

Chip looked a bit sheepish yesterday. Didn't want to say why. Finally he blurted out, "I'm a dope. Here I am working on this safety program and the fire inspectors tell me *my own studio's a fire trap*. I've been storing paint there for years and never thought..."

From where I sit, what hap-

pened to Chip could happen to anyone. He was just too busy making sure everyone else was kept informed about safety—and not realizing his own was in danger.

Like those people who fret about their neighbors—whether they can afford their new house, whether they should have hot coffee or a cool glass of beer with luncheon—Chip simply forgot to "draw" some rather obvious conclusions about himself!

Joe Marsh

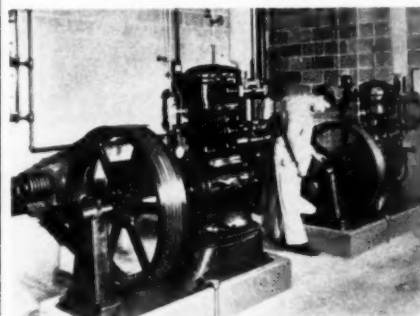
Copyright, 1953, United States Brewers Foundation

NEW FOR YOU

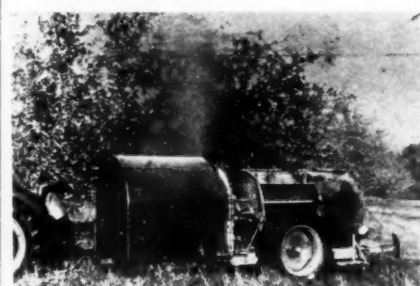
100 Years

One-hundred years ago the Frick Company started making farm machinery. Today this company is well-known to all fruit growers as a leader in the manufacture of cold storage equipment. Many of us have Frick equipment which is built to last and give outstanding service. We thought our readers would like to see one of the first Frick advertisements which is reproduced above.

Below is a photograph of a modern Frick refrigeration machine. Why not write Terry Mitchell, Frick Company, Waynesboro, Pa., today and ask him to send you the interesting Frick centennial folder which is just off the press.



Liqui-Duster

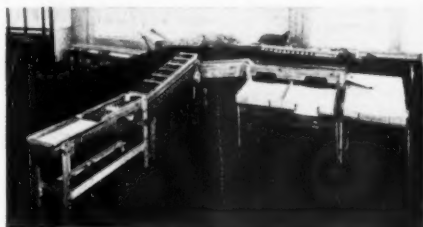


Many years of hard work in orchard testing has made the new Niagara liqui-duster an efficient and economical machine for orchard insect and disease control. With the new liqui-duster you can dust in wet weather or liqui-dust during dry seasons. The large dust discharge area along with a powerful air blast assures even distribution. Frank Chestnut, Niagara Chemical Division, Middleport, N. Y., will be glad to send you full details.

AMERICAN FRUIT GROWER

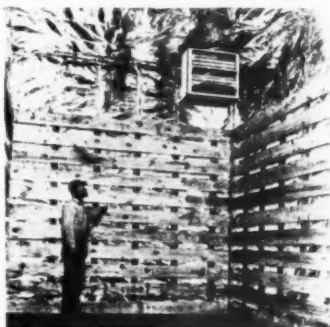
- 100th ANNIVERSARY
- CRAG FUNGICIDE

Graders



Bill Tew, formerly president of the Trescott Grader Co., has announced his purchase of the Friend grader line. Many new units have been added to the basic Friend line and improvements have been made. Write Bill Tew, Tew Manufacturing Corporation, Fairport, N. Y., for the latest information.

Foil Fruit Losses



A storage is only as good as the insulation used. Fruit growers are finding that aluminum foil insulation can cut farm cold storage costs sharply. Reflectal Corporation, 155 East 44 St., New York 17, N. Y., will be glad to send you all of the facts about their Alfol insulation.

Crag



Many growers have found that Crag, a relatively new fungicide, is proving most successful in the control of apple scab. This new product also tends to hold mites in check. We urge all of our readers to write J. V. Kenecally, Carbide and Carbon Chemicals Company, 30 East 42nd St., New York 17, N. Y. Ask him to send you, free of charge, the new Crag booklet which gives suggested spray schedules for cherries and apples.

FEBRUARY, 1953



the ELGETOL way

... FOR LOW COST, COMPLETE DINITRO DORMANT PROTECTION

ELGETOL has been giving leading fruit growers safe, satisfactory dormant spray protection for the past 14 years. Use low cost ELGETOL this year for complete control of aphids, scale, crown gall, and bud

moth on peaches, cherries, prunes, plums, almonds and apples.

Try ELGETOL 318 for controlling aphids, scale, bud moth and light to medium infestations of red mite on apples, cherries, prunes, plums and certain cane fruits.

ELGETOL Orchard Floor Spray Controls Apple Scab

For 5 years, a late dormant ground application of ELGETOL, followed by the use of one of the Mercurials in later sprays, has given outstanding control of apple scab. Send for ELGETOL Orchard Floor Spray circular.

STANDARD AGRICULTURAL CHEMICALS, INC.
HOBOKEN, NEW JERSEY • SACRAMENTO, CALIFORNIA



HOTEL

Biloxi

AMERICA'S YEAR-ROUND VACATION PARADISE

It's vacation-time 365 days a year at HOTEL BILOXI where folks come from east and west, north and south to lose their cares in the refreshing waters of the Gulf of Mexico. Golden days—cool nights. All sports . . . swimming, peddle-boating, golf, fishing. Real southern cooking in the Colonial Dining Room. Nightly dancing in the glamorous Creole Room. American Plan including all meals, 2 in a room, per person, from

European Plan, from \$4 single, \$6 double.

\$52.50
WEEKLY

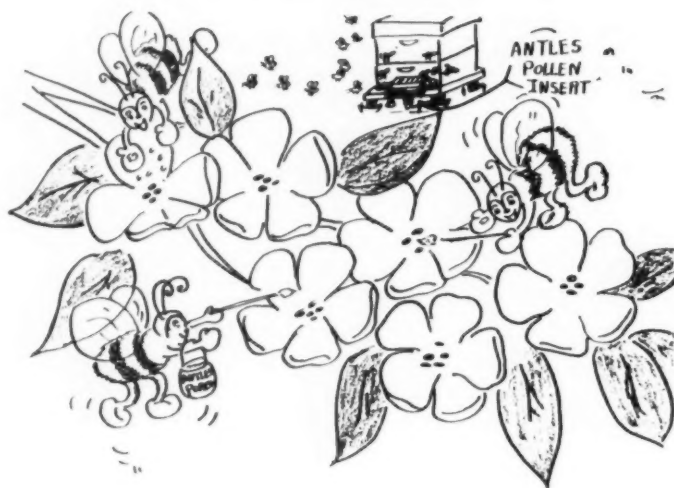
For reservations, see your Travel Agent, or write for folder.
C. Ould, Manager, Box D, Hotel Biloxi, Biloxi, Miss.

SPECIAL RATES TO
PARENTS OF KEESLER
FIELD SERVICEMEN.

BILOXI,
MISS.



POLLEN



STARTLING results of POLLINATION in 1952

by Ontario and British Columbia Fruit Growers who obtained 100% increase in Yield by spraying blossoms with sugar before applying pollen by HAND BRUSH, POLE DUSTER, & BEEHIVE INSERT. A Washington Grower DOUBLED his pear yield by spraying bloom with boric acid. An Idaho Grower gets outstanding results with the NEW HAND DUSTER idea on Cherries.

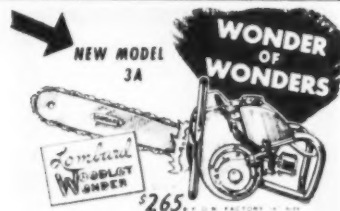
Sugar spray on trees in bloom increases insect activity and increases POLLEN DISTRIBUTION.

**L. C. ANTLES, B.S., M.S.
FRUIT TREE POLLEN SUPPLIES CO.**

Telephone 16 or 161

Write us for Information & Instruction

P.O. Box 1243, Wenatchee, Washington



- NEW cutting power
- NEW easy handling
- NEW high performance
- NEW all-around dependability

ALSO
BOW
MODEL

LOMBARD,

DEALER OPPORTUNITY
214 MAIN ST.
ASHLAND, MASS.

RUBBER Products
AMERICA'S FINEST

KATFISH BRAND

Rubber Bands
Aprons
Budding Strips
Clothing
Spray Bulbs
Korelax Pads
Footwear
Gloves
Sponge Rubber
Balls
Hose

* GET OUR CATALOG AND PRICE SHEET
BROADWAY RUBBER MFG. CO., LOUISVILLE 7, KY.



**Kelly's
FRUIT TREES**

• NOW we issue a New York State Dept. of Agriculture certificate which guarantees our cherry trees to be virus-free. Supplies of fruit trees are limited. It will pay you to order early this season. Our fruit trees: APPLES, PEARS, CHERRIES, PLUMS, PEACHES... are sturdy, northern-grown stock. Write for FREE CATALOG today.

KELLY BROS. NURSERIES, INC.
Established 1880
156 Maple St., Dansville, N.Y.

ESHELMAN FOR Better LAWNs And GARDENS

Women Can Operate It. Free Catalog. Write nearest branch: ESHELMAN CO.

Dept. T-73
119 Light St., Bldg. 2
2nd Fl., 333 N. Michigan Ave., Chicago 1, Ill.
105 Lake St., Reno, Nev.

195

MAKES FLOWS CULTIVATES HARROWS HAULS SPRAYS SAWS DOZES MOVS CUTS WALKING ROLLS TRACTORS LOW AS SNOW FLOW

1952 EXPERIENCE

(Continued from page 15)

by this pest. This statement may have been premature, since shortly after there came to our attention cases that might have been a beginning of the development of resistance. And in 1952, such cases multiplied. Thus far the trend isn't too clear. Although worm infestations were considerably worse in a number of orchards, seasonal or local conditions may have been the cause. Time only will tell. We hope that the codling moth will continue to be a minor problem indefinitely, but we can't be sure.

Systemic Insecticides

Systemic insecticides are arousing increased interest, although they have a long way to go before they can take a regular place in the orchard insect control program. Briefly, a systemic insecticide is one that is absorbed by the plant or tree through the leaves or roots and kills the insect as it feeds. Just what happens to the systemic insecticide inside the plant, and how it kills the insect, is not known.

Reports on results with systemic insecticides have varied. A few investigators working on fruit insects have been most enthusiastic, others much less so. Apparently the systemics show greater promise with plant lice and mites than with chewing insects. Health authorities rather logically want to know whether fruit that has become poisonous to insects is safe for human beings. Until that question has been clearly and favorably answered, the use of systemics will have to remain in the experimental stages.

Locust Control

An incidental use of TEPP will be in the control of the periodical cicada, or 17-year locust. This unique pest is due to appear this season in large numbers in many orchards from the Middle Atlantic states westward to Indiana. For the first time in history, an effective insecticide is available. However, TEPP acts only on direct contact with the insect and has little or no effect on those that infest the tree after the spray has dried.

This means that orchards close to severely infested woodlands would have to be sprayed almost daily for

An index of articles which appeared in AMERICAN FRUIT GROWER in 1952 is available. Simply send a post card request for your copy to AMERICAN FRUIT GROWER, Willoughby, Ohio. A binder for your 1952 copies will be sent upon receipt of your request and a dollar bill.

AMERICAN FRUIT GROWER



Old Doc TRESCOTT Says—

PRUNING BY AIR POWERED SHEARS SAVES TIME, LABOR AND MONEY.

Trescott Power Pruners are lightweight, fast and powerful using less air per cut and thus less costly compressors. You can buy a complete outfit consisting of a 36" and a 54" orchard pruner, 2-50' lengths of hose, Worthington Gasoline Driven Compressor equipped with moisture trap for \$384.75, plus freight.

Five models ranging in weight from 4½ pounds up and suitable for all work from light-cherry trees to heavy 2¼ hard-wood limbs.

Prune quickly even in cold weather with fast economical Trescott Power Pruners.



Trescott is the original manufacturer of fruit grading and handling equipment.

BRUSHERS	CONVEYORS
WASHERS	TWO-WAY BELTS
SIZING UNITS	PRUNERS

THE TRESCOTT COMPANY, INC.

Fairport, N. Y.

ATTENTION GRAPE & BERRY GROWERS

GREEN'S AUTOMATIC TRACTOR HOE



Automatically guides itself in and out between grapes, berries and plants.

Send for free literature

HOWARD C. GREEN
PORTLAND NEW YORK

FEBRUARY, 1953

adequate control. Orchards at greater distances from serious sources of infestation might be reasonably well protected by three to five applications a few days to a week apart. Damage to the trees begins about a week after the cicadas first appear. The start of the spraying should be timed with the first sign of egg-laying. The spray can be applied most effectively early in the day before the cicadas become active.

Newly planted and young orchard trees a year or two old may be protected by covering them with light open-weave cloth, such as heavy cheesecloth or netting, tobacco shade cloth, or the cloth used to cover tobacco seedbeds in the South. This should be put in place as the cicadas begin to appear and should remain in position for about five weeks, until most of the insects are gone. Many growers avoid setting out orchards the year preceding or the year of a severe cicada outbreak. In this way the trees are mature before the next locust year. However, the cost of cloth protection may be less than the loss of a year or two in the development of a new orchard. **THE END**

APPLE SCAB

(Continued from page 28)

marble. Scab spots always mar the appearance of the fruit and if they are numerous the apple becomes gnarled and distorted.

Control. It is possible to kill the scab fungus in the leaves and fruit spots with liquid lime sulfur. This is not an entirely satisfactory solution, however, for this spray may further injure the leaves, and the presence of the scab fungus in the fruit tissue affects the subsequent growth of the apple even after the fungus has been killed. Therefore, prevention rather than control is the motto the apple grower must adopt in dealing with the apple scab problem.

Since the fungus starts its activities anew each season by discharging spores from the rotting leaves on the ground, the logical approach to the problem is to kill these spores before they are discharged. Thoroughly spraying the orchard floor with a one-half per cent solution of the sodium salt of dinitro ortho cresol (Elgetol, Krenite) at the rate of 400 to 600 gallons per acre just before the bud-open will destroy more than 95 per cent of these spores on the fallen leaves. This ground spraying is a very helpful procedure where the orchard topography permits a rapid, thorough application, but even under ideal conditions, some spores escape and the trees must be sprayed during the growing season.

At present the orchardist has lime sulfur, wettable sulfur, sulfur paste, organic mercuries, ferbam, Orthocide 406, and Phygon from which to choose the growing season sprays. Since conditions vary in different parts of the country, the grower should be guided by the recommendations of his local agricultural experiment station as to the best material for use in his locality, the concentration, and the time the sprays should be applied.

Irrespective of the material used or the schedule followed, the grower should aim to prevent scab infections, for this is the key to scab-free fruit, healthy leaves, and a good fruit crop the following season.—John C. Dunegan, USDA.

Cut Spraying Costs



PIONEER

Leads Progress Parade

The air-blast Concentrate Sprayer has come to stay. Again and again, official tests have proved this type superior to older methods. It requires less man power, works faster and conserves material, yet gives more complete coverage. No water to pump or haul.

MUTO-MIST, a pioneer in this field, has been perfected year by year. It leads the progress parade.

Light Weight—Low Cost

Weighing only about 125 lbs., the MUTO-MIST is easy to handle. It operates safely on steep hill-sides and where heavy rigs would mire.

Get the facts NOW, before you start another spraying season.

Write for Detailed
Information

Mist Spray—
the Modern Way—

INTERNATIONAL MUTOSCOPE CORPORATION
Quality Products Since 1893

44-02 Eleventh St. Long Island City 1, N. Y.



Follow the advice of EXPERIENCED horticultural experts.

Spray easily—Spray thoroughly. Spray and drive your tractor—Save money with

HAMILTON SWIVEL GUNS

**Trouble Free
Quick Action
Shut Off Valves**

**BOOMS, NOZZLES AND
THE MOST COMPLETE
LINE OF SPRAY GUNS
MADE IN THE U.S.**

Write For Literature

W. L. HAMILTON & CO.
BANGOR, MICH.



NEW GRAPES

New disease resistant hardy grapes. Also new SEEDLESS. No spraying, delicious quality. Every home owner can grow them easily. Dwarf fruit trees, berries, nut trees. Small fruits. Guaranteed stock. Catalog free.

J. E. MILLER NURSERIES
545 W. Lake Rd. Canandaigua, N. Y.

EVERBEARING STRAWBERRIES
Streamliner, 100—\$3.50 Superfection, 100—\$3.00
Red Rich, 25—\$5.00 Prepaid
RED RASPBERRIES
Latham, New Berg, and Indian Summer
WRITE FOR CATALOG
DAVIS PLANT FARM, HAMILTON, MONTANA

**Beats Any Other Equipment
Ever Made for Tilling —
Cultivating — Year 'Round Use**



M-E ROTARY TILLERS

Just one demonstration proves M-E! Variable wheel and rotor speeds give controlled soil aggregation in tilling and cultivating universal tines are self-sharpening, non-winding, guaranteed against breakage. 6 models — 15 quick and easy plug-in attachments. See and buy M-E! \$125 and up.



★ FREE

BOOKLET

Fully illustrated
Write today to
M-E 315 Marion
Street, South
Milwaukee, Wis.



Free

SIMS BIG NEW CATALOG OF Orchard Tested FRUIT TREES

Complete
line of:
Berry Plants
Shrubs
Evergreens
Shade Trees
Garden
Roots
Nut Trees

★ Be Sure of your varieties. Get SIMS big new free catalogue and order direct from SIMS. You'll get the very best variety characteristics and stock propagated from bearing orchards—new and improved varieties are listed and many bargains. Special prices to commercial growers. Send for catalogue today.

SIMS NURSERIES Hannibal 2, Mo.

**FRUIT TREES, STRAWBERRY, RASPBERRY,
and BLUEBERRY PLANTS**

Nut and Shade Trees, Grape Vines, Flowering Shrubs, Evergreens. Over 80 years through four generations growing and selling service to planters guarantees satisfaction. New Free 60 page catalog illustrates, describes complete nursery line. Write today.

BOUNTIFUL RIDGE NURSERIES
Box F-23 Princess Anne, Md.

T. B. West & Son

MAPLE BEND NURSERY

FRUIT TREES ORNAMENTAL
SMALL FRUIT PLANTS TREES AND SHRUBS

Also Dwarfs in the Popular Varieties

PERRY, OHIO

Certified Strawberry Plants. Grown in the abundantly fertile soil on top of Waldens Ridge. Properly dug, cleaned and packed. Increase your yield and quality of fruit by starting with good plants. Blakemore, Klommore, Klondyke, Missionary, Tenn. Beauty, Robinson, Dunlap. Postage paid: 100, \$1.75; 250, \$3.50; 500, \$6.00. Commercial growers, write for prices on large orders.

ROMINES PLANT FARM

Phone 241-R Dayton, Tenn.

WANT TO MAKE WINE?

We supply the right grape vines (French Hybrids) and the wine-making requisites. Circulars.

BOORDY VINEYARD RIDERWOOD, MD.



Washington State Horticultural Association officers for 1953 are, left to right: John C. Snyder, Pullman, secretary; Elon Gilbert, Yakima, first vice-president; Grady Auvil, Orondo, president; and Fred Overley, Wenatchee, second vice-president.

STATE NEWS

(Continued from page 30)

shown to be closely associated with pruning practices which permit the spray material to get through the tree. The culti-cutter came in for much favorable comment.

New officers of the society are: President, Russell Everts, Metamora; first vice-president, Eric Kerlikowske, Coloma; second vice-president, Robert Anderson, Covert; and treasurer, L. A. Spencer, Pullman. H. D. Hootman, East Lansing, was re-elected secretary.

February 16-18 are the dates of the annual convention of the National Peach Council, at Spartanburg, S. C.

NEW HAMPSHIRE—Several new chemicals being tested at the University of New Hampshire agricultural experiment station show promise for complete control of apple scab, according to Dr. M. C. Richards, associate director.

Phygon XL has given excellent results when used in the pre-pink, pink, calyx, and first cover sprays. Richards reports, however, that its use should be limited to a protective spray—before infection actually occurs. Phygon XL mixed with three pounds of wettable sulfur in 100 gallons of water also gave excellent scab control.

In tests made with the new mercury fungicides it was found that these organic chemicals will burn out scab infections as well as give protection against new outbreaks. For best results, Richards states that these materials should be used in the pre-pink, pink, calyx, and first cover sprays.

Ferham has been tested with some interesting results, Richards reports. This material not only controls scab but has the added virtue of controlling rust on such apple varieties as Wealthy and Winter Banana, and also gives a better finish to fruits of russet-susceptible varieties like Delicious and Baldwin.—Harold W. Adams.

NEW YORK—A former Buffalo attorney, a fruit grower in Lewiston since 1909, and a weather observer for 40 years, has spelled out some of weather's effects on fruit growing.

"Probably no business today is tied more closely to the weather than fruit growing," declared Percy R. Morgan.

Mr. Morgan, who farms about 100 acres in the Mile Reserve Strip above Niagara

Gorge, grows apples, pears, peaches, cherries and prunes.

Each day he records temperature, barometric pressure, wind direction, and velocity, amount of rain or snow, and the character of the day. Monthly, summaries are sent to the Memphis, Tenn., weather office of the U.S. Department of Commerce. There are about 28 other accredited volunteer weather observing stations in western New York and about 4,500 in the nation.

"Of all the branches of agriculture," the fruit grower is most subject to weather change, Mr. Morgan pointed out.

All winter peach growers eye thermometers. They know that when the mercury sinks below —10° their peach buds will freeze and die. In 1934 most peaches in the Northeast, except those in an area from Lewiston to Wilson, were killed in a numbing cold wave.

"That next fall only our consciences limited our prices," Mr. Morgan said with a smile. "That's something that seldom happens to a fruit grower."

Mr. Morgan emphasized also how weather affects the pollination of three major fruit varieties, McIntosh apples, Bartlett pears, and Hale peaches. Self-sterile, these varieties must be cross-pollinated.

If the blossoms open in chilly or blustery weather, most bees will not fly, the blossoms will not be pollinated, and the crop will be poor. So when bad weather conditions limit bee activity, Mr. Morgan urges that growers rent additional colonies of bees to take advantage of the few bees in each colony that will fly.—George E. Toles.

ILLINOIS—Harold J. Hartley was employed as secretary of the Illinois State Horticultural Society and secretary-treasurer of the Illinois Fruit Council, Carbondale, upon the resignation on December 15 of Harvey B. Hartline, who filled these offices for the last two years.

A change in by-laws of both the society and the council makes the office of secretary of the society and of secretary-treasurer of the council a salaried position rather than an elective office.

The new secretary will be responsible to the joint executive boards of the two fruit groups.

IDAHO—Herb Garrett, well-known Canyon County orchardist for the last 10 years, died recently. He was 30 years old. Mr. Garrett had been associated with his father, Frank, in the Garrett Orchards in the Central Cove area.

AMERICAN FRUIT GROWER

CLARK

DWARF APPLE GRAFTS

Fully calloused and ready to grow. If planted in early spring, these grafts will be ready to bud to your favorite variety in August or can be grafted the next spring.

PREPAID PRICES

Each \$1.00; 3 for \$2.75; 10 for \$7.00; 50 for \$27.50; 100 for \$45.00 and 300 or more at \$40.00 per 100.

WHELOCK WILSON NURSERY

Box 421

Marshalltown, Iowa

Chinese Chestnut Trees

8" to 24" only 75c per tree for 10 or less at my nursery for spring 1953 shipment. Less prices for larger orders. U.S. Department of Agriculture call them "generally highly resistant to chestnut blight." Are sweet like the old American. Children love them raw. Have seen 18 year trees in Maryland bearing 50 pounds and no sign of blight.

D. GOOD'S CHINESE CHESTNUT TREE NURSERY

Lock Haven, Pa.



800

Varieties Grapes
Specializing in French Hybrids

Schroeder Vineyard

800 W. 17th St.
Hutchinson, Kansas

DWARF FRUIT TREES

Ideal for home gardens, require little space, full size fruit, bear early, 2nd or 3rd year. Also new grapes, nut trees, berries. Guaranteed stock. Catalog free.

J. E. MILLER NURSERIES

545 W. Lake Rd.

Conandaigua, N. Y.

BALDWIN'S FREE Catalog Will Save You Money

Baldwin's 1953 Catalog of Fruits, Shrubs, Roses, Flowers. Guaranteed Stock, reduced prices, 60 years' experience. New Brilliant Everbearing and Fairland Strawberries. Best varieties Raspberries, Boysenberries, Blueberries, Grapes, Asparagus, Tree Fruits, Nut Trees. Special offers—Cash discounts. Illustrated catalog free. Write today.

O. A. D. BALDWIN NURSERY, Box 122, Bridgman, Mich.



Maloney FRUIT TREES

Write for big FREE Color Catalog. Stock Northern grown on 600 acres in Dansville. Priced right. Fruit Trees, Berries, Shrubs, Roses. Guaranteed to grow or replaced FREE. Established 1884.

MALONEY BROS. NURSERY CO.
81 Circle Road, Dansville, N. Y.

PEACH APPLE TREES LOW AS 20¢

Cherries, pears, plums, nut trees, strawberries, blueberries, etc. Grapes 10c. Shrubs, evergreens, shade trees, roses 25c up. Quality stock can't be sold lower. Write for FREE color catalog and \$2.00 FREE bonus information.

TENNESSEE NURSERY CO., Box 4, CLEVELAND, TENN.

HUNT'S GRAFTING WAXES, RODENT REPELLENT, ETC.

MICHIGAN BEE & FARM SUPPLY
510 N. CEDAR LANSING I. MICH.
"Successor to M. H. HUNT & SON"

AMAZING MULTIFLORA ROSE SHOWS

LIVING FENCES 5¢

BEAUTIFY YOUR HOME with dense rose hedges. At low cost—as little as 5¢ a foot. WRITE TODAY for FREE CATALOG.

WHITTEN NURSERIES, Box 6, BRIDGMAN, MICH.

WILDER MEDAL AWARDS

THREE prominent horticulturists—Samuel Fraser, George Frederick Potter, and Maxwell Jay Dorsey—and the U. S. Department of Agriculture were awarded Wilder medals during the recent convention of the American Pomological Society in Grand Rapids, Mich.

The Wilder medal, awarded annually by the APS to individuals for distinguished service to horticulture and to promising seedling and new fruits, was established by the society in 1873 and named for the illustrious president of that organization, Marshall Pinckney Wilder. During the history of the medal there have been awarded 216 silver medals and 66 bronze medals.

The award was presented to Mr. Fraser, executive vice-president of the International Apple Association, for his outstanding leadership in the apple industry. Dr. Potter, horticulturist and scientist, was recognized for his significant contributions to the tung industry. Dr. Dorsey, secretary of the National Peach Council, received recognition for his contributions to the science of horticulture.

The honor was bestowed upon the USDA for the origination of meritorious varieties of peaches, including the Cardinal, Dixigem, Dixired, and Southland for eastern production, and the Fortuna, Cortez, Andora, and Carolyn for western production.

NEW METHODS

(Continued from page 24)

A major advantage of this new method is that it doesn't interfere with our other insect control practices. Each disease is specific apparently for each insect species; it cannot cause buildup of other insects as DDT causes mite increase. Still another advantage is there isn't any residue problem. A disadvantage to the apple grower is that this method may be of little or no value in the control of the codling moth.

New kinds of equipment?—Radical departures from our more modern spray equipment do not appear on the horizon. Modifications will come about slowly from time to time, but nothing startling is on the designing tables.

So, here's the immediate future of fruit insect control—overall methods appear more or less static right now. Biggest changes may come in the chemicals themselves, for new insecticides and miticides are arriving steadily from the chemical laboratories. Chances are good for changes in the kind of chemicals or their formulations.

THE END

YES!

WE HAVE THE
SENSATIONAL
NEW
SEEDLESS
GRAPE
INTERLAKEN



• This is the FINEST SEEDLESS GRAPE we know of. Introduced by the New York State Experiment Station, it is a cross between the California Thompson Seedless and Ontario. But INTERLAKEN is superior to even the famous Thompson.

Berries and clusters are medium size but the QUALITY IS UNSURPASSED. Berries are amber colored, crisp, solid, sweet throughout. They CAN BE EATEN WHOLE as they have no seeds to bother. Have a delightful vinous aroma and refreshing tangy flavor. INTERLAKEN RIPENS EARLY—by August 15th. Vines are vigorous and disease free. They bear and thrive even after temperatures as low as minus 15 degrees.

Plant INTERLAKEN this year. They are bound to be much in demand once the public learns of their superior quality. But ORDER EARLY. Our supply is strictly limited.

Price: \$1.75 each; 2 for \$3.25; 5 for \$7.50; 10 for \$12.50 Postpaid.



BIG FREE FULL COLOR CATALOG

OF FRUIT TREES, BERRIES, ROSES, ORNAMENTAL and FLOWERING TREES and SHRUBS.

Kelly

BROTHERS NURSERIES INC.

156 MAPLE STREET DANSVILLE, N. Y.

OPPORTUNITY ADS

Only 25c a Word—CASH WITH ORDER. Count each initial and whole number as one word. ADDRESS AMERICAN FRUIT GROWER, 106 Euclid Ave., Willoughby, Ohio

BABY CHICKS

HELM'S APPROVED PULLORUM CLEAN CHICKS. Nationally famous thirty years. Brown Leeborn holder three world records. Leading breeds. Free brooding booklets. ILLINOIS HATCHERY, Metropolis, Ill.

CHAINS

CHAINS—TRACTOR, TRUCK, ROAD GRADER, BUS. Write for circular, give tire sizes—prompt shipment. HOBNER TRACTOR SALES, Geneva, Ohio.

CIDER MILLS—PRESSES

CIDER AND WINE PRESSES, HAND AND HYDRAULIC, new and rebuilt. Repairs and Supplies. Clarifiers and Filters. Bottling equipment. Write for supply catalogue. W. G. HUNKLES' MACHINERY CO., 185 Oakland St., Trenton, New Jersey.

FOR SALE—EQUIPMENT AND SUPPLIES

WOODEN BARRELS, NEW OR USED, ALL SIZES. For cider, vinegar, fruits. We ship anywhere. MASLOW COOPERAGE CORP., 16 Court St., Brooklyn 1, N.Y.

SELL OR TRADE: GALLON CLEAR GLASS JUGS in cartons, quantities delivered, bargain prices. N. C. JOHNSTON, Columbia City, Indiana.

DIRECT FROM IMPORTER—HIGHEST QUALITY German made pruning shears, knives, etc. at wholesale prices. Request illustrated list. EXCELSIOR, 377 Coolidge Ave., Fort Lee, N.J.

SPEED SPRAYER, NIAGARA DUSTER, LATE MODEL, good condition. CORY ORCHARDS, Cory, Indiana.

LAST CHANCE FOR WINTER BARGAINS—1 Buffalo turbine combination sprayer-duster, 32 HP water cooled engine. Very good and real bargain—sale or trade. NX Friend on skids. Complete custom sprayer's rig on old White truck. 1 mist blower and whitewash machine. A real buy. AGRICULTURAL & INDUSTRIAL SERVICES, Cincinnati Pike, Batavia, Ohio.

NEVER USED PRESORTED SPRAY BOOM. MAKES your sprayer automatic. Still in original crate. Very low price. Box 128, AMERICAN FRUIT GROWER, Willoughby, Ohio.

GEESE

GOOSE AND DUCK HATCHING EGGS GUINEA, pheasant and quail. Small low priced incubators for these breeds. Illustrated interesting circular free. GOSHEN FOLLY FARM, G-22, Goshen, Ind.

HELP WANTED

WANTED: ORCHARD FARM MANAGER. 3000 TREES, small fruits, poultry. State of Maine. Give education, experience, age, family status, wages expected, first letter. Write Box 132, AMERICAN FRUIT GROWER, Willoughby, Ohio.

MONEY MAKING OPPORTUNITIES

CHURCH GROUPS—RAISE FUNDS EASILY!! FREE catalogue. Complete credit. Over 50 useful, unusual money-makers. HEB PRODUCTS, Dept. 532, Oneonta, N.Y.

NEED EXTRA MONEY? SHOW YOUR FRIENDS wonderful regal line of All-Occasion Greeting Cards. Over 100 beautiful assortments to choose from. Also Exclusive Stationery unobtainable elsewhere. No experience necessary. Your profit up to 100% plus bonus. Write for free samples. Sales kit on approval. RETAIL GREETING CARD CO., Dept. 43, Ferndale, Michigan.

MAKE MONEY ADDRESSING ENVELOPES. OUR instructions reveal how. PAUL GLENWAY, 5713 Euclid, Cleveland 3, Ohio.

ORCHARDS FOR SALE

18 ACRES, 500 YOUNG, HARDY, APPLE TREES. Modern 8 room home. Priced right. Small cash payment. Write ADRIAN SALES CO., Realtors, Adrian, Mich.

TWENTY-FIVE ACRE FRUIT FARM, HIGHWAY market, business established. Modern, city utilities, refrigeration. Death of husband reason selling. Near Springfield, Highway 60, MRS. J. B. STICKNEY, Republic, Missouri.

TRADE MARKS

NATIONAL TRADE MARK COMPANY, MUNSEY BUILDING, Washington, D.C.

WANTED TO BUY

WANTED: SMALL CIDER PRESS. GIVE FULL information. IRVIN SNAVELY, Dalton, Ohio.

WANTED: GOOD CASE DO OR INTERNATIONAL 60 tractor. Also late model 36 Speed-sprayer. STYER BROS., Woodbourne, Penna.

WANTED: SMALL APPLE SIZER AND BRUSHER. MANNIE COLON, Canon City, Colorado.

WANTED: USED 20-35 GAL. PER MIN. BEAN. Meyers or other power sprayer or pump only. WRIGHT ORCHARD, Hamburg, Iowa.

CORN CENTER DOIN'S



"Little Lem's jist like his paw—can't wait to start spring plowing with them Power-Curve tractor tires!"

You'll start spring plowing earlier and work faster if your tractor rolls on B. F. Goodrich Power-Curve tires. The powerful sharp-edge cleats dig into even the hardest soils to give you greater drawbar-pull. Every turn of a Power-Curve tire counts because the curved cleats take a firm hold on the soil, assure you of full traction in forward as well as reverse. Dirt and mud can't clog in the open-center

tread. They are thrown free by the flexing action of the tire as it rolls. B. F. Goodrich tractor tires stay clean, and only clean tires can give full traction. And these tires give you more service for your dollar because the extra-high cleats wear longer. When ordering a new tractor, always specify Power-Curve tires made by B. F. Goodrich—First in Rubber.

An advertisement of The B. F. Goodrich Company, Akron, Ohio

Profits and Production DEPEND ON THE TREES YOU PLANT

- BUD SELECTION
- TRUE-TO-NAME VARIETIES
- PROVED and PROFITABLE

The Greening Nursery Company, one of the leaders in bud selection, have for over 100 years given all growers the benefit of their research and improved strains which mean greater orchard profits.

AGENTS WANTED

LIVING FENCE—Rosa Multiflora. 15-18" Plants. 500—\$25.00. \$45.00 per thousand.



Send 10c to cover postage for the Greening 100-year anniversary 50-page color catalog.

THE GREENING NURSERY CO.

P. O. Box 605, Monroe, Michigan

STRAWBERRY PLANTS



Allen's 1953 Berry Book tells best varieties for home and market, and how to grow them. Free copy. Write today.

W. F. ALLEN COMPANY
105 Evergreen Ave., Salisbury, Maryland

Guaranteed Nursery Stock CATALOG FREE

Big 1953 Catalog of Baldwin's Guaranteed Nursery Stock. 60 years' experience. Best varieties of Tree Fruits, Raspberries, Blueberries, Grapes, Asparagus, Roses, Shrubs, Nut Trees. New Brilliant Everbearing and Fairland Strawberries. Reduced prices—Special offers—Cash discounts. Free illustrated catalog. Write today.
O. A. D. BALDWIN NURSERY, Box 118, Bridgman, Mich.

NUT TREES

New, Hardy English walnut. Carpathian strain. Rapid grower, bears early, very productive, beautiful shade tree. Chinese chestnut, dwarf fruit trees, berries, grapes. Catalog Free.

J. E. MILLER NURSERIES

545 W. Lake Rd. Canandaigua, N. Y.

Evergreen Lining-Out Stock TRANSPLANTS and SEEDLINGS

Pine, Spruce, Fir, Canadian Hemlock, Arborvitae, Multiflora Rose, in variety. For growing Christmas trees, Windbreaks, Hedges, Forestry, Ornamentals. Prices low as 2c each on quantity orders. Write for price list. SUNCREST EVERGREEN NURSERIES, Dept. AFG, Box 594, Johnstown, Penn.

AMERICAN FRUIT GROWER

The Orchard Home

THERE IS nothing like a fresh warm pie, cobbler, dumplings, or a tempting icebox pie made with your favorite fruit to complete the main-course meal and to serve to friends who drop in for a game of canasta or bridge during the evening. And along with the pastry recipe of your choice, complement it with a wedge of sharp cheese.

Featured this month is the Special Cherry Cobbler which is pictured at the right. This cobbler can be prepared in a jiffy with prepared biscuit mix; or, if you prefer, you can use your own special biscuit recipe. The shredded cheese, sprinkled over the biscuit mixture, will give an added tang to the cobbler. Then arrange the biscuits attractively along the sides to make this dish appealing to the eye as well as to the taste and serve it, either warm or cold, to friends and family.

Recipes for Special Cherry Cobbler and other mouth-watering pastries are given below:

SPECIAL CHERRY COBBLER

- 1 No. 2 can pitted red tart cherries
- ½ cup sugar
- 3 tablespoons cornstarch
- ¼ to ½ cup milk
- 1 cup prepared biscuit mix
- 1 cup shredded cheese

Drain cherries and heat juice to boiling. Blend sugar and cornstarch. Add enough water to make a thin paste. Gradually add to hot cherry juice and cook until thick and clear. Add cherries. Place in a shallow baking dish. Add milk to biscuit mix and mix well. Roll out in an oblong piece ¼-inch thick. Sprinkle with shredded cheese and roll as for a jelly roll. Cut into ½-inch slices and place around edge of cherry mixture. Bake in hot oven, 425° F., 12 to 15 minutes, or until biscuits are done.

PLUM DUMPLINGS

Drain a jar of canned plums. Make a rich biscuit dough and roll out about ½-inch thick. Cut into 4-inch squares.

Place 2 canned plums in center of each square. Bring dough up and pinch together to make dumplings. Put into a deep baking dish and bake at 425° F. for 20 minutes, then pour a half cup or more of hot sauce around dumplings and finish baking. Sauce is made by blending 2 tablespoons flour, ½ cup sugar, and 1 teaspoon cinnamon. Heat 2 cups juice drained from fruit. Add a little water if there isn't enough juice. Take a little of cold juice and blend sugar mixture to a smooth paste. Slowly add to rest of juice after it starts to heat, stirring constantly, and cook until clear and slightly thick. Serve hot.—Mrs. Blanche Campbell, Las Vegas, Nev.

APPLE ROLL

Add 1 cup sugar and nutmeg or cinnamon to taste to 8 pared, cored, and sliced apples. Make a rich biscuit dough and roll ¼-inch thick. Spread apple mixture over dough and roll as for jelly roll. Make slices about ½-inch thick. Have a pan ready in which 1 cup sugar and ¾ cup water have been boiled for five minutes. Put slices in this, dot with butter, and bake about 20 minutes in moderate (350° F.) oven. Serve either hot or cold with plain or whipped cream.—Mrs. S. M. DeGriselles, Worthington, Minn.

LEMON ICEBOX PIE

- 1 small can evaporated milk
- 2 eggs
- ½ cup sugar
- 1 tablespoon grated lemon rind
- ¼ cup fresh lemon juice
- Spiced crumbs

Pour milk into ice tray and chill until crystals start to form. Separate eggs. Mix



yolks with sugar, lemon juice, and grated rind. Beat egg whites until stiff, then lightly mix in yolk mixture. Turn chilled milk into bowl, beat stiff, and carefully fold into egg mixture. Pour into ice cube tray lined with spiced crumbs. Decorate top with cherries and mint leaves.

Spiced Crumbs

To ¾ cup crisp toast crumbs, add ½ cup brown sugar, ½ teaspoon nutmeg, ¼ teaspoon allspice, 1 teaspoon cinnamon, ¼ teaspoon ground cloves, ¼ teaspoon ginger. Mix well. Work in 3 tablespoons melted butter. Line ice cube tray, pressing firmly with spoon.

APRICOT WHIPPED CREAM PIE

- 2 cups dried apricots
- 5 cups water
- 4 tablespoons quick-cooking tapioca
- 1½ cups granulated sugar
- ¼ teaspoon salt
- 1 teaspoon vanilla
- ½ pint whipping cream
- 1 10-inch baked pastry shell
- ½ cup toasted shredded cocoanut

Wash apricots, drain, add water, and boil 20 minutes. Add tapioca and boil 10 minutes. Add sugar and salt and continue boiling 10 minutes, stirring constantly. Remove from fire, add vanilla, and chill. Whip cream until thick. Whip apricot mixture into cream a small portion at a time. Pour into baked pastry shell and sprinkle with cocoanut. Chill before serving. Serves 8.



PRINTS ARE IN THE NEWS

This is the month for planning your spring wardrobe, and high on the list we suggest the print dress. Printed silk shantung, lightweight woolsens, or the heavier cottons can be worn almost immediately and well on into the first warm days of summer. Shown here, the basic dress with

lines so simple and flattering it is always in fashion. Dress with detachable contrast collar requires 4½ yards of 35-inch fabric without nap for a size 16; ¼ yard of 35-inch fabric for the contrast collar. Advance Pattern 6120. Sizes 12 to 20. Price 35 cents.

Send order and cash for patterns to Pattern Department, American Fruit Grower, Willoughby, Ohio. Be sure to specify size. Print name and address clearly.

• Fruit for Health •

The Consumer Is a Guinea Pig

IF THE consumer knew how critically he was being scrutinized and to what detail he was being subjected, he might well feel that he was a human guinea pig. For example, in the Harvard studies in marketing farm products there is a publication by Warren J. Bilkey entitled, *The Basic Relationships in Consumer Expenditure Behavior*.

Here you will find charts and complex formulas that remind you of higher mathematics and you will find such statements as "theoretically, at least, a rational consumer's expenditure behavior during his entire life can be explained by a very complex difference relationship."

It seems that "a woman is not always able to tell you just what it is she wants but she is quite likely to know it when she sees it. That is why women are such shoppers; they go from store to store to get the style details, the quality, the price they want. They do not have these points all analyzed and tabulated in their own minds when they start looking,

but when they find an article that meets these unexpressed, but none-the-less real requirements, the shopping is over and buying begins."

Also, we learn that "consumers must be regarded as progressive living beings, that their behavior has much similarity to that of a growing business concern, that they react to current circumstances in terms of their past and their expected future as well as to the exigencies of the moment."

Some of this classical jargon may sound funny to the man trying to sell apples and oranges to Mrs. Housewife. But it is invigorating to know that erudite and sophisticated students recognize that "... a woman is not always able to tell you just what it is she wants ..." or that "consumers must be regarded as progressive living beings!"

We knew we had a problem in this marketing field. When it can be defined in terms of a complex formula maybe all we will need to do is to figure it out on paper and go on a long, much needed vacation.

Children Prefer Fruit But Don't Get It

PROFESSIONAL nutritionists, dentists, and doctors are alarmed over the increasing use of candy and soft drinks in schools where children buy snacks in addition to lunches. The American Dental Association has gone on record as discouraging the sale of candy, soft drinks, and other confections in schools because of the serious problem of tooth decay which affects 90 per cent of our population.

Meanwhile an enterprising young company is finding success in the sale of fruit in schools through a fruit vending machine known as the Fruit-O-Matic. In two high schools in Oklahoma, which recently installed fresh fruit vending machines, school principals found that children preferred fresh fruit to candies and pops.

With the birth rate attaining an all time record in 1947 of 3,876,000 babies, it is important that children become fruit users as early as possible. Schools, doctors, and dentists are alert to this problem, and now it re-

mains for the fruit grower to take advantage of the opportunity.

A method for regular supply of fruit to schools must be discovered before the pops and colas and candy bars wear away too many young fruit customers.



Fruit Talk

The American Association of Nurserymen reports that all plants and trees sold by nurserymen are absolutely guaranteed to contain chlorophyll.

"Farmers must of necessity predict the future no matter how hazardous it may be," say Pearson, Myers, and Warren. "... but only the naive publicize their predictions."

Dr. S. W. Simmons, chief of the U.S. Public Health Service of Savannah, Ga., has reported that DDT changes to a harmless degradant, DDE, when lodged in human fatty tissue.

Studies of handling cost and apple storages in Washington state by Herrick show that the handling of individual boxes is pretty expensive. Labor for handling a thousand field boxes at the storage house by belt conveyor and clamp type two-wheel hand truck was \$8.66 compared with \$8.2 for 48-box pallets and fork-lift trucks.

United Kingdom research workers report that *Rubus Henryi* is the test plant for hidden viruses in raspberries, as *Fragaria vesca* is in the strawberry.

The total cost of all labor engaged in marketing farm food products was estimated at \$13.2 billion in 1951, compared with \$9.3 billion in 1946, and an average of \$4.2 billion in 1935-39. Some of this increase is due to larger numbers employed—increase of 28 per cent in 15 years.

There is recognition awaiting the individual who can reduce the apparent and undesirable toughness in the skin of frozen blueberries.

Per capita consumption of citrus fruits in 1951 was 25.5 pounds in France, 11.2 in the United Kingdom, 22 in Belgium, 28.6 in Switzerland, 13 in The Netherlands, and 22.6 in Sweden, compared to approximately 50 pounds in the United States.

Drained weights tend to increase in frozen Montmorency cherries, according to Loufti, Bedford, and Robertson, as the sirup density is increased. And the flavor of sirup packs with added ascorbic acid is superior to dry sugar packs.

Take time to work—it is the price of success.
Take time to think—it is the source of power.
Take time to play—it is the secret of perpetual youth.
Take time to read—it is the fountain of wisdom.
Take time to be friendly—it is the road to happiness.
Take time to laugh—it is the music of the soul.
Take time to dream—it is hitching your wagon to a star.
Take time to give—it is too short a day to be selfish.
Take time to love and be loved—it is a God given privilege.

—H.B.T.

Coming Next Month

- Stocks for Fruit Trees
- How to Graft and Bud
- Propagating Small Fruits
- Grafting Nut Trees
- Save Time with a Garden Tractor
- Grow Virus-Free Strawberry Plants

AMERICAN FRUIT GROWER

Presenting...New Dodge "Job-Rated" Trucks!

Only trucks with all these farm features!



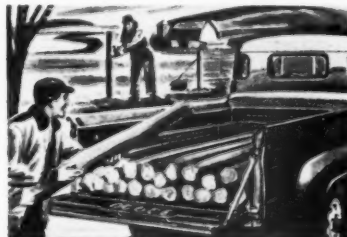
New Horsepower Boost! 7 high-compression engines! 3 all-new, with greater power, displacement, cooling capacity. Twin carburetion available on larger trucks.



New! Super-Safe Brakes! Stop smoothly, easily, with less pedal pressure. New stepped-up braking, forward or in reverse, on 1- through 2½-ton Dodge "Job-Rated" trucks.



New! Shift-Free Driving! Truck-o-matic transmission available on ½- and ¾-ton trucks. Saves shifting, cuts driver fatigue, lets you rock out of snow, mud!



New! Bigger Pick-Up! Now a 116" wheelbase ½-ton pick-up to accommodate bulky loads, save extra trips! Reinforced cab construction on all new models, too.



New Tailgate Sealing! New tighter-than-ever tailgate fit on pick-ups and expresses. Another Dodge extra farm value, to give you more for your money!



New Styling! More chrome, new streamlined pick-up and express rear fenders. Smart new two-tone cab interiors in contrasting shades of maroon and grey.



New! Dodge-Tint Glass! Tames fierce sunlight, reduces eyestrain, increases safety, means cooler cabs in summer! Dodge-Tint Glass is available on all models.



New Body Flooring! The flooring in all pick-ups is tough eight-piece yellow pine. New flooring in panels of two-piece plywood with metal skid strips.



Over 50 New Features, in addition to proved features like moistureproof ignition, two fuel filters, rustproofed sheet metal and superior maneuverability.

½- THROUGH 4-TON ... THERE'S ONE TO FIT YOUR JOB. SEE YOUR FRIENDLY DODGE DEALER!

DODGE "Job-Rated" TRUCKS

IN CONCENTRATE SPRAYS...



—John Bean photo

use **CRA[®]G** Fruit Fungicide 341

FOR EFFECTIVE CONTROL OF
APPLE SCAB AND CHERRY LEAF SPOT

It gives You—

- less bulk in the spray tank
- less chance of nozzle plugging — it's a liquid fungicide
- shorter filling time

CRA[®]G 341 is specially suited for concentrate sprays. This liquid glyoxalidine fungicide saves filling time because it is easily measured and requires no screening — just pour it into the spray tank. It goes into solution with minimum agitation even at the highest concentrations.

CRA[®]G 341 has been used extensively in concentrate sprays by many growers in the principal apple-growing regions where scab is a problem. It can give effective apple scab control in either dilute or concentrate sprays.



CHERRY GROWERS —
HAVE YOU TRIED CRA[®]G 341
FOR SOUR CHERRIES?
IT COMBINES ECONOMY AND
EFFECTIVE LEAF SPOT CONTROL
IN EITHER DILUTE OR
CONCENTRATE SPRAYS.

"Crag" is a registered trade-mark of Union Carbide and Carbon Corporation

PROTECT FOR PROFIT
with



CRA[®]G

Trade-Mark
AGRICULTURAL CHEMICALS



**CARBIDE AND CARBON
CHEMICALS COMPANY**

A Division of
Union Carbide and Carbon Corporation
30 East 42nd Street **INC** New York 17, N. Y.